

3864

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

19-860

Name: Abigail C. O'Brien

Address: PO Box 416
Osterville, MA 02655

Phone Number (Please include area code): 508-428-8186

Email Address: _____

Please state your questions/comments in the space below:

Why allow a power plant in middle of Travelling, recreation + Community?
area

Cape Wind + Their Draft Env. Imp. Statement is False in many areas:
The power plant will pollute the Sound, kill wild life, devastate sea life.
This power plant should be located on land away from populated
areas or areas used regularly like the Sound. If you allow this
business to proceed you will be approving a horrible fate for many
people. We get many unpredictable storms in Nantucket Sound. This means
dreadful air Debris into the water, Blades the size of school buses
flying around the air striking + killing anything in its path. The
poor birds or anything else getting caught between the blades will
then become another killing device. Cape Wind is lying. They want to
make a lot of money. Not only will we not be able to enjoy the Sound,
we will have to avoid it, just to stay alive. People that live inland
won't be threatened that much as those of us who live on the coast
will be. And, it's not a matter of "IF" a tsunami will hit the Atlantic
Coast, but "when." Can you imagine the kind of death + destruction
130' 420' + 80' (only) drilled into the sea floor which constantly shifts,
will cause? For what so some fast talking business man can make a
buck? AT the very least the power plant will distract the tourism
we rely upon on the Cape Cod island. The Very worst, Death, destruction, injuries
and sickness from all the air washing up on to our shores. Please help us, there
is nothing clean about this energy source.

Please fold this questionnaire in half, affix two stickers or pieces of tape,
and mail it to the address listed on the other side.

Respectfully Submitted
Abigail C. O'Brien

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3865

NAME: Nicole Driscoll

ADDRESS:

340 Colchester Ave.
Burlington, VT 05401

PHONE NUMBER: _____

EMAIL: ndriscol@uvm.edu

YOUR COMMENTS:

Food for thought for Representatives of
the people on the topic of Cape Wind.
Wouldn't it be wonderfully forward-thinking
of you to support renewable energy? Noble,
unselfish, even savior-istic in this day
when our energy demands continue to
rise & our environment's ability to sustain
us declines? There is no denying global
warming is occurring. We could waste our
time debating the causes - but we would be
fiddling away precious time as the
oceans continue to rise. We must do
everything we can to curb global
warming. As a leader you must
support the health & well-being of
your "constituents." I plead with
you - holding a public office, please
think publically & how much the
people ~~and~~ & this earth
NEED renewable energy.

Thanks,

Nicole

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3866

NAME: Sarah Wilkins

ADDRESS:

Austin 319 31 Spear St.
Burlington, VT 05405

PHONE NUMBER: (202) 310-4618

EMAIL: sewilkin@uvm.edu

YOUR COMMENTS:

The Cape Wind proposal is an excellent idea in today's suffering climate. The world is changing at an unprecedented rate and coal, natural gas, nuclear CO₂ emissions are effecting the way in which our ecosystems function. Wind is an intelligent use of energy - it is a CLEAN source of energy that has very minimal impacts on the environment and virtually none in the long-run. The Cape Wind project would be very beneficial to those that live off shore. It will drastically ~~increase~~ reduce emissions, health concerns (asthma), reduce acid rain impacts, and benefit our country in ^{many} more ways. It's time for wind power in this country. As the world's richest country, it's time we wise up and use clean energy. We need to lead by example.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3868

NAME: Emily Benjamin

ADDRESS:
Box 1120, Brown Univ.
Providence, RI 02912-1120

PHONE NUMBER: _____

EMAIL: Emily-Benjamin@brown.edu

YOUR COMMENTS:

Cape Wind is completely, 100% necessary. The myriad benefits, including jobs, health improvements due to reductions in pollution, and better air quality on the Cape far outweigh any aesthetic problems that the rich along the sound have. They need to wake up & realize that their children will not want to live on the sound in the future if we continue to pollute as we are.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3869

NAME: Caitlin Smith

ADDRESS:
Mount Holyoke College
2928 Blanchard Student Ctr.
South Hadley, MA 01075

PHONE NUMBER: (814) 574-2314

EMAIL: CaitSmith@mtHolyoke.edu

YOUR COMMENTS:

So you think wind turbines are all
eyesore eh? Well, so are oil refineries
and power plants. Wind turbines however,
provide clean energy. They are better for
our health, our environment and imperative
to the future well-being of our planet.

Let's see them as a symbol of progress -
a statement of human ingenuity and even
compassion for the earth and future generations.
~~Let's see the energy side~~

The bottom line is by rejecting
wind power as an alternative clean energy
source you are a supporter of dirty
energy and global warming by default.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3870

NAME: Rachel Vigour

ADDRESS:
3131 Sugar Hill Lane
Crozet VA 22932

PHONE NUMBER: 434 823 2623

EMAIL: Vigour@fulbrightweb.org

YOUR COMMENTS:

Wind power has the potential to provide
much of the power required by residences and
businesses on the East Coast. Together with
projects in Energy Conservation, Wind power
can help reduce air pollution, climate change,
and the U.S.'s dependence on imported fuels.
Please encourage the wind power project. Thank you.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3071

NAME: Mark Little

ADDRESS:
MC Box 3563
Middlebury College
Middlebury VT 05753

PHONE NUMBER: 802 443-4088

EMAIL: _____

YOUR COMMENTS:

In the words of Son Fishman
this wind is not alternating
energy, it is foundational. The
scenery / + beauty of our shores
is not just for our own
eyes, but for further generations

think long term.

Mark

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3872

NAME: Aaron Goldma

ADDRESS: 75 OLD Farm Road

PHONE NUMBER: 802 864 0426

EMAIL: aaron@youthfor democracy.org

YOUR COMMENTS:

Sounds like a great idea!

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3873

NAME: Caroline Webster

ADDRESS:

18 Holt St
Belmont, MA
02478

PHONE NUMBER: 802-443-7365

EMAIL: cwebster@middlebury.edu

YOUR COMMENTS:

Cape Wind is the most logical step towards the Renewable Energy Portfolio Standards. It is also the best way of addressing the energy needs of the Commonwealth. Rather than fossil fuel burning power plants which cause health problems, contribute to climate change, and increase dependence on unsustainable ~~fuel~~ fuel sources, wind power does not hurt anyone, is sustainable, and the only real "damage" it could cause is to a ~~landscape~~ new view of a landscape that (a) is essentially ~~invisible~~ an invisible impact and (b) is viewed from a landscape (the Cape + Islands) ~~whose~~ whose very presence is threatened by the effects of climate change. We are empowered in this situation because there exists a clear, viable solution to the problems of energy needs and slowing the rate of greenhouse gas emissions. Let's seize this opportunity and pursue this solution!

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3874

NAME: Jessica Perryman

ADDRESS:

439 Lookout Ave
Ridgway PA 15853

PHONE NUMBER: 332-2170

EMAIL: perrymj@allegheny.edu

YOUR COMMENTS:

Please continue working for
clean energy. It is so important to
our future. Don't make poor choices
that will damage our environment for the
future.

Jessica Perryman

RECEIVED

11/11/10

11/11/10

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3875

NAME: Eric Shansby

ADDRESS:

PO Box 203912
New Haven, CT 06520

PHONE NUMBER: _____

EMAIL: _____

YOUR COMMENTS:

Please consider the importance of sustainable
energy sources, not only because of cost efficiency
and pollution, but b/c it will spread.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3876

NAME: Ashley Hall

ADDRESS:
Box 480 Millis Hall
67 Spear Street
Burlington, VT 05405

PHONE NUMBER: (802) 318-8610

EMAIL: aahall@uvm.edu

YOUR COMMENTS:

I support wind energy. I do not find the
aesthetic impact at all displeasing, and would like
the nation to be actively researching and improving upon
alternative sources of energy. Actually, I wouldn't call
them alternate. They're essential in becoming THE
source of power.

RECEIVED

NOV 17 2008

U.S. DEPARTMENT OF ENERGY

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3877

NAME: Hart Feuer

ADDRESS:

3744 SW Sweetbriar Dr

Portland, OR 97221

PHONE NUMBER: 503-227-1643

EMAIL: feuerh@lafayette.edu

YOUR COMMENTS:

After traveling and studying for almost a year in Germany, and visiting the extensive wind farms in alpine Austria, I can report that both on and off-land wind operations conducted in the manner proposed by Cape Wind Energy, and in general, are tried and true. The turbines become sightly and a cultural icon of the advancement of sustainable energy production. The logistics and concerns presented by opponents have been overcome, even with older machinery than is currently employed today.

If Germany or Austria had the same opportunity as ~~Cape~~ that presented here at the Nantuxet Sound, it would have become an economic and environmental asset many years ago.

Thank you,

Hart Feuer

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3078

NAME: SOPHIE MAZOWITA

ADDRESS:

226 POWELL AVE.
OTTAWA, ON
CANADA K1S 2A5

PHONE NUMBER: 613-237-4685

EMAIL: solizma@yahoo.com

YOUR COMMENTS:

Alternative, renewable sources of energy are
becoming an increasingly viable form of energy,
and these will play a crucial role in eliminating
our dependence on fossil fuels. I hope we
can develop wind farms all throughout North America.
There is currently a windmill in downtown Toronto
which I think (or hope) serves as a great
educational tool to the public about renewable energy.
Wind is the way of the future!

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3879

NAME: Adela Maciejewski

ADDRESS:

4074 OLD ORCHARD
MONTREAL, CANADA
H4A 3B2

PHONE NUMBER: 514 369 3864

EMAIL: run_adela_run@hotmail.com

YOUR COMMENTS:

It seems to be ^{of} paramount and vital importance
that we in North America develop clean technologies
in order to reduce greenhouse gas emissions. We do
have the resources and the human potential, so I
really applaud initiatives like this one. What I have
noticed is that it seems that people don't
know that wind power is ready and
feasible, and so it's important to get the
message out.

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3880

NAME: Melissa Henry

ADDRESS:

415 Carmichael Hall
Tufts University
Medford, MA 02155

PHONE NUMBER: 781.866.9696

EMAIL: melissa.henry@tufts.edu

YOUR COMMENTS:

I would like to express my support for the Cape Wind Project. We critically need to switch to new power sources which are more environmentally friendly. The Cape Wind Project would be a great opportunity to set a precedent for alternative energy. The potential environmental hazards have been thoroughly researched and I think they are negligible. Thank you for supporting this project.

Melissa Henry

COMMENT ON THE CAPE WIND PROJECT DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)

3001

NAME: Jennifer A. Baldwin

ADDRESS:
24 Alexandria Dr
Medway, MA 02053

PHONE NUMBER: 508-533-4570

EMAIL: jennifer.baldwin@tufts.edu

YOUR COMMENTS:

As an environmental science student conducting research on renewable energy, I support the Cape Wind project because I hope to work locally for a wind power provider. Right now any jobs I could get in the wind power market would be in the Dakotas, California, or PA. I would encourage more projects like this to provide ~~more~~ jobs in a sustainable economy.

Jm

ENCLOSURE

10-13-2015

10-13-2015

3082

February 15, 2004

To the Army Corps of Engineers:

This is an independent analysis of the proposed Cape Wind energy project that we would like to submit as part of the public input phase of your review process.

We have raised, in the paper, concerns, briefly noted at the end, that we feel could make the review process more thorough.

If you would like to respond to our analysis or need to contact us for any other reason, our email addresses are as follows:

Kyle Magid: kmagida@fas.harvard.edu

Tim Schmidt: tschmidt@fas.harvard.edu

Ken McKinley: mckinley@fas.harvard.edu

Thank you for your consideration,

Tim Schmidt

Tim Schmidt

RECEIVED

FEB 19 2004

ARMY CORPS OF ENGINEERS

ENVIROCITIZEN

the center for
environmental citizenship

Northeast Office
83 Highland Street
Roxbury, MA 02119
617.427.3598 ph
617.442.3742 fx
www.envirocitizen.org

3883

Karen Kirk Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Dear Ms. Kirk Adams:

These are several more letters and postcards signed in favor of the Cape Wind Project, collected in the Northeast by students. We have already sent along several hundred of these, but wanted to make sure and get the final few together to send this last week. We appreciate your extensive work on this issue in the past and continuing on now with the end of the public comment period.

I hope that the voices of the young people of the northeast are given due credit, as many of them are very adamant about their desire to see clean energy in the country. Thank you for giving us the opportunity to speak about such an important issue, and EnviroCitizen hopes to give voice to the many students in the region who care about clean air, more sustainable jobs, environmental justice, and clean energy.

Thank You,

Students of the Northeast

3883

RECEIVED

2008 03 18

03 18 2008

National Office
ph 202.986.1650
cec@envirocitizen.org

Rocky Mountain Office
ph 303.534.5798
cecwest@envirocitizen.org

Northwest Office
ph 206.256.6429
cecncw@envirocitizen.org

I, NOAH MUNRO
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Noah Munro

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742



Email: Munro@greenmta.edu
Phone: (602) 287-8173 School: Green Mountain College
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3083

I, Carly Whalen
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, [Signature]

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742



Email: Snickus246@aol.com
Phone: 607-391-2942 School: Plattsburgh
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Sarah Wilkins
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Sarah Wilkins

ENVIROCITIZEN
The Center for Environmental Citizenship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: Sarah.fenster@uvm.edu

Phone: _____ School: UVM

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Sarah Wilkins
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Sarah Wilkins

ENVIROCITIZEN
The Center for Environmental Citizenship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: sewilkin@uvm.edu

Phone: (802) 310-4618 School: UVM

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Karen Kirk-Adams

ENVIROCITIZEN
The Center for Environmental Citizenship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: nkirk@uvm.edu

Phone: _____ School: Bowdoin College

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Aaron Tucker
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Aaron Tucker

ENVIROCITIZEN
The Center for Environmental Citizenship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: atucker@middlebury.edu

Phone: 802-443-4765 School: Middlebury

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3003

I, Kristina Schult
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kristina Schult

ENVIROCITIZEN
The Sentinels of Sustainability
The Environmental Center, Inc.
Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: Klasib@ecologyfund.net
Phone: 658-8320 School: UVM
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Kristina Schult
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kristina Schult

ENVIROCITIZEN
The Sentinels of Sustainability
The Environmental Center, Inc.
Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: Kschult@wheatonma.edu
Phone: 508-286-4693 School: Wheaton College MA
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3883

I, Jessie Bernier
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Jessie Bernier

ENVIROCITIZEN
The Sentinels of Sustainability
The Environmental Center, Inc.
Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: persym@allegany.edu
Phone: 814-332-2170 School: Allegany College
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, CORY BERMAN
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Cory Berman

ENVIROCITIZEN
The Sentinels of Sustainability
The Environmental Center, Inc.
Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: ctsgd@allegany.edu
Phone: 656-5731 School: UVM
More information Earthnet News
Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, AMY SHAW
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Amy Shaw

ENVIROCITIZEN
THE CENTER FOR RESPONSIBILITY
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Amy.Shaw@usc.usc.edu
 Phone: 635-6244 School: JOHNSON STATE COLLEGE
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, AESHLEIGH
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Aeshleigh

ENVIROCITIZEN
THE CENTER FOR RESPONSIBILITY
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Kvrm@vm.edu
 Phone: (502) 701-2439 School: UNIV OF VT
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3083

I, NATALIA FIELDS
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Natalia Fields

ENVIROCITIZEN
THE CENTER FOR RESPONSIBILITY
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: _____
 Phone: _____ School: University of Vermont
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Bobby Lane
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Bobby Lane

ENVIROCITIZEN
THE CENTER FOR RESPONSIBILITY
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: clerone@middlebury.edu
 Phone: 802-443-3461 School: Middlebury
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Jess Givell
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Jess Givell



Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: phubofreast@hotmail.com
 Phone: (79)931-6344 School: Concordia
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Phoebe Van Vleet
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Phoebe Van Vleet



Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Phobofreast@hotmail.com
 Phone: - School: College of the Atlantic
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3083

I, MAXIM REAUREGARD D'ONNIE
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Maxim Reauregard D'Onnie



Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: gejivem@hotmai.com
 Phone: 8795684532 School: U. of Ottawa
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, KATH DIBSON
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kath Dibson



Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Kathdibson@hotmail.com
 Phone: 594 481 5219 School: Concordia U
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Stephan Wells
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Stephan Wells

ENVIROCITIZEN
The Center for the Study of Environmental Decision Making

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Salsava - 1564641@comcast.net
 Phone: 514 937-0058 School: Concordia
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Phil Gauthier
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, _____

ENVIROCITIZEN
The Center for the Study of Environmental Decision Making

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: P-gauthier@comcast.net
 Phone: 514-893-7437 School: Concordia U.
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3003

I, Jonathan Overman
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Jonathan Overman

ENVIROCITIZEN
The Center for the Study of Environmental Decision Making

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Jonathan.Overman@middlebury.edu
 Phone: 802 243 4841 School: Middlebury College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Keith Fisher
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Keith Fisher

ENVIROCITIZEN
The Center for the Study of Environmental Decision Making

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Keith.Fisher@smcvt.edu
 Phone: (603) 542-5271 School: Saint Michaels College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Caitlin Smith
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Caitlin Smith

ENVIROCITIZEN
The Organization of Environmentalists
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Caitlin2985@vassar.com
 Phone: (817) 574-2314 School: Mount Holyoke College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, MATT TURCOTTE
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Matt Turcotte

ENVIROCITIZEN
The Organization of Environmentalists
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: wjtu@conncoll.edu
 Phone: _____ School: Connecticut College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3883

I, Caitlin Smith
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Caitlin Smith

ENVIROCITIZEN
The Organization of Environmentalists
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: Caitlin@conncoll.edu
 Phone: 600 439 3400 School: Connecticut College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Matt Turcotte
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, _____

ENVIROCITIZEN
The Organization of Environmentalists
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: wjtu@conncoll.edu
 Phone: _____ School: Mount Holyoke College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Margaret Luppino
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, 

ENVIROCITIZEN
The Seal of the U.S. Army Corps of Engineers
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: MARGEN27@hotmail.com
 Phone: 413/493 5669 School: Mt. Holyoke College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3003

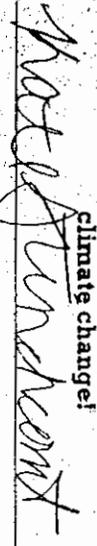
I, Serena Higgins
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, 

ENVIROCITIZEN
The Seal of the U.S. Army Corps of Engineers
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: SMTN@conncoll.edu
 Phone: _____ School: CONNECTICUT College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

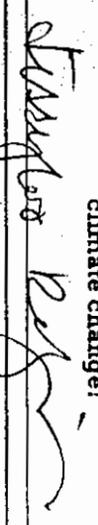
I, Kate Stinchcomb
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, 

ENVIROCITIZEN
The Seal of the U.S. Army Corps of Engineers
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: KStinchc@uvm.edu
 Phone: 802 542 4733 School: UVM
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Jessyloe Rodrigues
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, 

ENVIROCITIZEN
The Seal of the U.S. Army Corps of Engineers
 Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: jesykur@cox.net
 Phone: _____ School: Green Mountain College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Nicole Delong
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Nicole Delong

ENVIROCITIZEN
THE CENTER FOR ENGINEERING
 SUPPORTING ENVIRONMENTAL JUSTICE

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: delongn@greenmta.edu
 Phone: 802-287-8572 School: Green Mountain College
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Stephanie Fisk
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Stephanie Fisk

ENVIROCITIZEN
THE CENTER FOR ENGINEERING
 SUPPORTING ENVIRONMENTAL JUSTICE

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: _____
 Phone: _____ School: _____
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3883

I, CORY SAXTER
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Cory Saxter

ENVIROCITIZEN
THE CENTER FOR ENGINEERING
 SUPPORTING ENVIRONMENTAL JUSTICE

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: MO75488@USNA.EDU
 Phone: 443-321-2908 School: UNITED STATES NAVAL ACADEMY
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, IMMORTAL DOUG GREEN
 thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Doug Green

ENVIROCITIZEN
THE CENTER FOR ENGINEERING
 SUPPORTING ENVIRONMENTAL JUSTICE

Karen Kirk-Adams
 Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers,
 New England District
 696 Virginia Road, Concord, MA 01742

Email: MO73267@USNA.EDU
 Phone: _____ School: USNA
 More information Earthnet News
 Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Joseph Grossman
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Joseph Grossman

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: grossmanj@wh60.com
Phone: _____ School: UVM

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Becky Schreiber
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Becky Schreiber

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: schreiberb@capecod.edu
Phone: _____ School: UVM

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3883

I, Juana Torres
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Juana Torres

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: travertj@uvm.edu
Phone: 516 972-9332 School: UVM

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Kelly Bryan
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kelly Bryan

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: kbryan@middlebury.edu
Phone: _____ School: Middlebury

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Kevin Allen
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kevin Allen

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: atsy_dire@hotmail.com

Phone: _____ School: U Maine

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, _____
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, _____

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: Sarahbayer@hotmail.com

Phone: 603 804 0020 School: U Maine

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Kevin Allen
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Kevin Allen

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: atsy_dire@hotmail.com

Phone: _____ School: _____

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

I, Sammy Wheeler
thank the Army Corps for thorough research on the Cape Wind project, which shows that wind turbines would have little or no negative impact on the surrounding ecosystem, economy, and communities on Cape Cod, while providing clean, affordable energy that would improve public health, support environmental justice, add jobs, and reduce the impact of climate change!

Signed, Sammy Wheeler

ENVIROCITIZEN
The Center for Environmental Stewardship

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Email: egwhele@middlebury.edu

Phone: 802 442 3411 School: Middlebury College

More information Earthnet News

Contact: Riley Neugebauer 617-427-3598 www.envirocitizen.org

3003

Dear Karen Kirk-Adams,

3084

I am a student at Mount Holyoke College studying climate change. I most recently lived ~~on~~ in Woods Hole, Cape Cod. I am in full support of the building of the wind farm.

This would supply clean energy which is a necessary action that should be pressed with the growing amount of greenhouse gases being emitted into the atmosphere. The only opposition to this project is the obstruction of the view.

Well, if we don't take steps to preserve our environment ~~the~~ our beautiful ^{ecosystems} ~~environment~~ & pleasing views will only diminish further.

Sincerely,

Lisa Brunie

1387 Jefferson St.

Floral Park, NY 11001

lbrunie@mtaholyoke.edu

Dear Karen,

3885

My name is Conor Driscoll, and I live on Cape Cod in Town MA. I am writing to express my wholehearted approval of the Cape Wind Project. Thank you for taking progressive steps to ensure the sustainability of alternate energy sources in the US. This is a great step in something which needs to happen.

Thank you,

Conor Driscoll

Conor Driscoll

cdriscoll@smcvt.edu

3886

To the Army Corps of Engineers,

February 21, 2005

I am a nine year old girl hoping for a better future. Clean air, clean water, clean everything. We need these wind farms in the U.S. 92% of our energy is nonrenewable. My class at the Chilmark School is doing a project having to do with our energy. I am tiered of nonrenewable. It's going to be gone sooner or later. Then we won't have it. We need to do something. Think of your children and your children's children. We need these wind farms.

Thanks for your time,

Sincerely, Alexis Willett 3rd grade Chilmark School

Alexis Willett

RECEIVED
FEB 23 2005
U.S. ARMY CORPS OF ENGINEERS
WATERWAYS DIVISION
1000 BRIDGE ST
WASHINGTON DC 20542

Feb 15, 2005



Peter L & Gloria E Weston
PO Box 1253
North Eastham, MA 02651-1253

US Army Corps of Engineers
ATTN Karen Kirk Adams

3887

I AM sending this letter in support of the Nantucket Sound Wind FARM.

The U.S. has been much too slow to develop Renewable Energy.

All evidence indicates that the rigs in the Gulf of Mexico enhance fishing and those are Oil Rigs not clean power windmills.

We must however ensure that Cape residents enjoy the economic benefits of this cheaper power

I would not be surprised if OPEC and other oil interests are in back of the opposition to this small interruption of their gravy train.

Thank you
Cape Cod Residents
Peter & Gloria Weston

PO Box 363
Nantucket
MA 02554
Feb. 17, 2005

3888

Karen Adams, Project Manager
Regulatory Division
696 Virginia Road
Concord MA 01742

Dear Ms. Adams,

I support the proposed wind farm
for Nantucket Sound.

Global warming's negative effects
on our earth convince me that
more sources of renewable energy
should be pursued.

I have read through the
Executive Summary (1.0) of
the Draft EIS/EIR/DRI.

Despite some reservations (avian)
I believe on balance that
Cape Wind should be permitted
for their proposed project
on Horseshoe Shoals.

Thank you for your work, and
for your consideration.

Sincerely,

Karen K. Borchert

Charles B. & Doris G. Dahmen

52 Blair Lane

P.O. Box 848

West Falmouth, MA 02574-0848

Tel/Fax: (508) 540-6524

3889

February 17, 2005

Ms. Karen Adams
Cape Wind Energy E & S Project
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Re: "Cape Wind Project"

Wind power may seem a likely source of non-polluting power, but it needs to be IN THE RIGHT PLACE! Those that exist in this country are not located in such vulnerable spots as the proposal involved here. Denmark -- not a persuasive situation! They have taken around 80 of theirs off line -- not conducive to the amount of money and labor and disruption needed to build in Nantucket Sound.

Where are some sound, proveable figures that tell us how much residents can possibly save by such a massive project?

Most urgently, I am NOT in favor of the Cape Wind project going ahead!



Doris G. Dahmen

RECEIVED

FEB 22 2005

U.S. ARMY CORPS OF ENGINEERS

3890

Massachusetts
PTA[®]
everychild.one voice.
P.O. Box 710
Fiskdale, MA 01518-0710

February 17, 2005

Karen Kirk-Adams, Cape Wind Energy Project EIS Project Manager,
U.S. Army Corps of Engineers, New England District,
696 Virginia Road, Concord, MA 01742-2751.

RECEIVED
FEB 17 2005
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD, MA 01742-2751

Dear Ms. Kirk-Adams,

On behalf of more than 15,000 members of the Massachusetts PTA and our children, I am writing to support the Cape Wind Farm Project. We believe that clean power will bring many health, environmental, and economic benefits to Massachusetts children and their families.

The true cost of the emissions from burning fossil fuels is the pollution contributing to the escalating rates of asthma, birth defects, cancer and learning and behavior disorders.

The evidence continues to grow that pollutants spewing from power plants and refineries contribute to dangerous ozone levels that cause lung and cardiovascular diseases. The number of alerts about "unhealthy," "very unhealthy," and "hazardous" air quality increases every year. These are the days when the government warns parents and teachers that the air is not safe for children to play outside.

At a time when public health experts are urging everyone to fight obesity by increasing physical activity, pollution puts people with chronic lung and heart

3090

diseases at risk. They are warned to avoid exertion to prevent asthma attacks, chest pain, shortness of breath, fatigue, congestive heart failure and cardiac arrhythmias. And even healthy people develop respiratory infections and have trouble breathing on bad air days.

Coal plants are the single biggest source of mercury pollution. Mercury has contaminated our lakes so that pregnant women and children are warned not to eat tuna because mercury causes birth defects and brain damage.

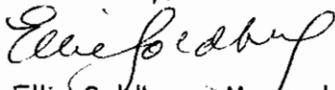
The economic burden of these pollution-induced illnesses and disabling conditions on individuals, families and communities as well as our health care and education systems is enormous.

One solution is wind power. Wind power reduces the need to burn coal and oil and the need for nuclear power, a source of energy that is not safe, clean or cost-effective.

Wind power is clean. And, wind power reduces our dependence on foreign sources of energy. Reliance on oil from unstable parts of the world makes our country vulnerable to political and economic manipulation and distorts our foreign and domestic policies and priorities.

For all these reasons, the Massachusetts PTA supports the development of Cape Wind as a clean renewable source of energy in our region. Wind power will help us protect our children's health and their economic future and quality of life.

Yours truly,

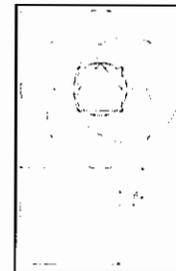


Ellie Goldberg, Massachusetts PTA Legislative Chair
(H) 617-965-9637 erg_hk@juno.com

3891

TIMELESS ARCHITECTURE

Henry MacLean, AIA
Principal
147 School St, Milton, MA 02186-3513
Voice (617) 696-6448 fax (617) 696-4071
E.mail: Timearch @Aol.com, www.Timearch.com



February 19, 2005

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms Kirk-Adams ,

I am writing to encourage the adoption of the Cape Wind Project. As an Architect, and former Chair of the Committee on the Environment (Boston Society of Architects) and past University Professor of Architecture, I have been involved with developing curricula and teaching Sustainable Design for the past 15 years.

This Cape Wind Project is the best response to clean Sustainable Energy to come along in New England ever, and should be supported by anyone interested in the quality of life and the environment we are leaving to the next generation. The exhaustive studies that this project has been put though to date is testament to the responsible and forward thinking attitude of its developers.

I strongly urge you all to do everything in your power to support this Project and help in its implementation.

Thanks for your time.

Sincerely,

Henry MacLean, AIA

RECEIVED
FEB 23 2005
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

Howard C. Llewellyn
PO Box 2055
Cotuit, MA 02635 - 2055

3092

February 22, 2005

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
US Army Corps of Engineers, New England Div.
696 Virginia Road
Concord, MA 01742

Wind Farm

Dear Ms. Kirk-Adams:

After reading a fair amount of materials on the Cape Winds Project, I find that I cannot support this project. Here are the major issues for me:

*Benefit. I do not see any significant benefit from the Wind Farm Project to homeowners or in the reduction of fossil fuel to justify this project..

*Give Away. It seems we are giving away natural resources and subsidizing a private-for-profit project. This is not a correct procedure.

*What if? What happens if the project fails or is damaged by a storm, accident or bad engineering (note the problems with the Big Dig in Boston)? Who pays to correct or clean up the mess? Are sufficient funds set aside to protect the taxpayer?

*Life. What is the life of the wind farm? Does the private developer pay for maintenance and repairs?

*Beauty. I saw the Hull wind farm turbine, and it is on land and smaller than what is being proposed for Nantucket Sound. It is ugly. It no way blends into the landscape.

Sincerely,


Howard C. Llewellyn

RECEIVED
FEB 23 2005
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
CONCORD, MA

3893

Dear Karen

It is in flavor of the wind farm Cape wind associates with the condition that they agree ^{in writing} to a user fee or tax etc in the future after they receive their costs and are making a profit.

- Reasons for Support
1. Clean air
 2. Not dependant on oil
 3. Reduce Electric costs
 4. Reduce oil spills
 5. Save \$5 million a year
 6. Increase in jobs

Hopefully this will be one of many wind farms. All the benefits would be ~~much~~ increased with minor inputs

What can we do for the country?
Act with courage and leadership!
Reduce dependance on oil coal etc.
oil is at about \$48 this week -
and will rise in the future,
or when there is a shortage in supply

Thanks
(over)

Art Glasby
235 Pleasant St Milton Ma 02186

3063

Please don't let any last minute
objections affect the outcome.

WILLIAM M. VANNEMAN
THIRWOOD PLACE APT. 250
237 N. MAIN ST.
SOUTH YARMOUTH, MA 02664-2088

3894

02-19-05

U.S. Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742

RECEIVED
FEB 22 2005
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

Dear Corps:

Over the months and years I have heard and read all the arguments for and against the proposed "Wind Farm" in Nantucket Sound.

I have also listened to the argument that any action should be deferred until a national policy on coastal waters use is established.

I have come to the following conclusions:

1. I believe the "pro" arguments are based on sound facts
2. I believe the "con" arguments are largely emotional fears and are weightless
3. I believe it only makes common sense to build the first U.S. Wind Farm in the least expensive and most favorable location possible - and that the location under review is that place.
4. I believe the U.S. Army Corps of Engineers is completely qualified to evaluate all of

(over)

the factors involved in deciding whether or not such a facility should be constructed - including specifically, a national policy on coastal waters.

5: Therefore, IF your final decision is to approve the project, I believe the politicians and the nay-sayers should be ignored.

3894

Very truly yours

William W. Vanneman

AB. Cornell University, 1931
MBA Harvard University, 1933

2-22-05

3095

DEAR K. K. ADAMS

AS SO MANY FOLKS HAVE SAID.

"SAVE OUR SOUNDS."

TAE WINDS FARM MUST NOT BE
BUILT IN NANTUCKET SOUND.

CAPT. BOB NELSON
271 OXLEY HOMESTEAD DR
MARSTONS MILLS MA.
02646-1733

RECEIVED
FEB 23 2005
10:30 AM

Feb 16 2005

3896

Karen Adams Mgr Cape Wind Energy EIS

Dear Ms Adams -

I am writing about a specific of your E.I.S., and on the Cape Cod Commission's reported reaction to that same specific: bird kill.

I have been a steadfast supporter of the C.C. Commission from before their enactment. I still am.

But I was not proud of their reaction to your bird kill analysis. Your EIS's reminder of the broad extent of birds lost by collision with works of man was scoffed at by the Commission as irrelevant.

To me, your point was transparently true and clearly relevant.

cont.

①

3896

~~3896~~

It speaks to the "steady state" of the bird populations despite the collisions rates everywhere which are several orders of magnitude above the case under study.

If I have not made my point clear, you can reach me at (508) 255 3415, or by mail at my home shown below.

I am a member of Orleans Wind Power Committee and an Orleans board member of Cape Light Compact.

Most Sincerely

Richard W Philbrick

57 Barley Neck Rd

Orleans MA 02653

P.O. Box 1643

RECEIVED

APR 13 2006

ORLEANS MA

(2)

3897

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: Susan Playfair

Address: 249 Jerusalem Rd.
Coliasset, MA 02025

Phone Number (Please include area code): (781) 383-0707

Email Address: splayfair@comcast.net

Please state your questions/comments in the space below:

1. Why are we giving away a public resource to a private contractor so that he can make a profit from our loss?
2. If Cape Wind is serious about providing wind power to the Cape, why isn't it making efforts to purchase land instead of asking for a free handout of a valuable and beautiful stretch of water that presently gives solace and pleasure to the larger community?
3. Given the dismal failure of the Commonwealth to monitor engineering projects involving water (see Harbor tunnels), why would we even consider entrusting a firm to erect windmills in a hostile saltwater environment?
4. Our commercial fishing industry presently has enough obstacles to face in the waters being discussed. Why would we give them 77 new obstacles to work around?

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

3898



February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Dear Ms. Adams:

The Barnstable Land Trust would like to add its name to the ever growing number of individual and organizations who believe the Cape Wind DEIS is woefully inadequate.

Nantucket Sound is one of our town's and nation's most public and loved natural resources. The Cape Wind industrial complex will be easily visible from the Town's entire southern shore and will for our lives and future generations, alter the visual quality, open space and special character of Cape Cod.

We strongly urge that the Army Corps of Engineers take the time to fully explore the many issues outlined in lengthy letters by the Cape Cod Commission, The Alliance to Protect Nantucket Sound, Three Bays, Inc. and Massachusetts Audubon Society. The questions and concerns raised in their letters must be answered before a permit is granted that will forever alter Nantucket Sound.

To address the issues, the Barnstable Land Trust joins the chorus which is requesting a Supplemental DEIS/DEIR. This project is the first in the nation, so it is critical that the final document adequately and accurately identify the impacts of the proposed project. The DEIS/DEIR must be objective and clear and its assumptions must be supportable because the impacts of the Cape Wind Project will last forever.

Sincerely,



Jaci Barton
Executive Director

RECEIVED
FEB 23 2005
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

Karen Kirk Adams
Cape Wind Energy Project EIS Project Mgr.
Corps of Engineers, New England District
696 Virginia Road
Concord, MA. 01742-2751
(Reference file no. NAE-2004-338-1)

This letter is being written to address concerns regarding the placement and the number of towers to be erected in Nantucket Sound. It is generally agreed that additional sources of energy are needed to lessen the need for 'fossilized energy'. The use of specified 'wind farms' may indeed be the answer, however the location of the 'towers' in the location of Horseshoe Shoal may create a navigation hazard for those seamen who must work in that particular area of the Sound.

It is not at all an infrequent practice to head a passenger vessel up into that direction or in more nautical terms 'tack' in that direction to provide a safer and more comfortable ride for the passengers and crew of our ferry and freight vessels. These 'tacking' procedures help insure that passengers and crew do not find themselves in a position to be tossed about in rough seas. This maneuver lessens the chance of passengers falling down ladders or stairways.

This 'tacking' is also done by our freight vessels to keep the tractor trailers that we carry from shifting or even worse tipping over. We have already experienced a propane tanker tipping on its side. We were extremely fortunate that was all that transpired. We could have faced a situation of catastrophic proportions.

3829

Another factor that should be discussed is the need of maneuverability. In some case it has been necessary to use that particular area to avoid a 'close quarter' situation with larger fishing vessels. On occasion we have also used the area to avoid sailing vessels engaged in racing. True the latter are remote instances however it has been necessary to use the waters near Horseshoe Shoal for the same specified purposes.

Thank you for the opportunity to present my opinion and concern.

Gratefully yours,



Capt. Thomas Manley
Woods Hole, Martha's Vineyard,
Nantucket Steamship Authority.

RECEIVED

NOV 13 1958

U.S. NAVY

Colonel Thomas Koning, 3900

I am writing to you with my concern for Nantucket Sound.

First let me say that I am very much in favor of renewable energy.

I have attended meetings and read both arguments about this so called renewable energy plan, and it is my opinion that this is more to do with someone's scheme to make large profits and not benefit Cape Cod very much, considering things like the environmental damage it will cause. It will also cause problems with air and boat traffic, I could go on.

I have a small business very near a beach overlooking the sound, and several of our best clients are going to put their houses on the market if this project goes through. I myself love to walk on the beach and gaze at the pristine beauty that I see and feel.

I believe this project will also have a negative affect on tourism, and on my life as well as many people that I know and do business with. We will be greatly discouraged if this goes through.

Thank you for listening to my opinion and please consider with your intelligence and your heart the feelings of people who live + work here because they love it.

sincerely,

Karin Wood

To:

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742
wind.energy@usace.army.mil

3901

This is send as comments on the Cape Wind Project

Please approve this project now. We need renewable energy sources. We can't rely on Saudi Arabia for the energy needs of our country. It is a national security issue and an economic issue.

Please approve this project now. We need to cut down on CO2 emissions. Due to Climate Change the bird habitats, nesting areas and food sources are disappearing all over the world. Polar bears are starving and the poles are melting. The catastrophe facing all wildlife due to Climate Change is incomparably huge to the few birds that may collide with wind turbines.

Please approve this project now. The result of ocean level rise will lead to the elimination of beaches around the globe, this continent, including Cape Cod, including everything south of Route 28, including the Kennedy compound. There will be views but no beaches to stand on. This is according to EPA's own estimates on the federal www.yosemite web site.

Please approve this project now. The effects of other toxic emission such as mercury from the increased burning of coal will poison our oceans and make ALL fish inedible.

Please approve this project now. The increased frequency of extreme weather events is costing billions in increased damage, insurance payouts, deaths and destruction. Forest fires, hurricanes, storms, floods and droughts are effecting the globe, fellow Americans here at home as well as people in the world's poorest regions. We must lead with innovation not inaction.

Please approve this project now. Our children can not wait! It is wrong and despicable to teach the children in schools to recycle and take care of the earth while global destruction is on-going and is driven by short sighted industry interests and is abated by non-existent government intervention.

US ACOE

Wake up ~~EOEA~~, it is your children and your children's future! Make a stand on the side of sanity and make THE ALTERNATIVE COMPARISONS BY TAKING INTO CONSIDERATION ALL THE FACTORS AFFECTING THE ENVIRONMENT, AND THAT INCLUDES ALL POINTS MADE ABOVE.

Respectfully submitted,


Dorothy Allen
12 Fenno Way
Nahant, MA 01908
781-593-5466

RECEIVED
NOV 14 2007
10:00 AM
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

3902

Feb 20, 2005

U.S. Army Corps of Engineers
New England District
Cape Wind Energy EIS Project
Attn. Karen Kirk Adams

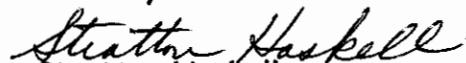
Dear Ms. Adams and Corps of Engineers:

I write to express my support for the Cape Wind Project as it is proposed for Nantucket Shoals. Practically all the arguments that have been put forth to deny this project are specious and without merit, just the parroting of the propoganda that has been unleashed by the Alliance to protect Nantucket Sound, This is a self-centered group of deep pocket people who refuse to see the benefits of a significant source of clean power for the area.

Common sense tells us that the advantages of such a project far outweigh the questionable negatives that are continually thrown out to discredit the plan. Cleaner air through a clean, renewable energy source, with the probability of cost savings over the long haul- what could be a better argument for exploring the plan to the fullest!

The aesthetic arguments, the harm to tourism, the "national treasure" claims, all make little or no sense. Take a look at the scene along I 101 in Santa Barbara, where out in the ocean less than a mile or two from shore, one can see a large number of ugly oil-drilling platforms with their threat of shoreline pollution. Santa Barbara is as upscale community as there is, and the oil wells have done little or nothing to decrease the desirability of living there, and the costs thereof! It's a sure thing that the wind farm would have no effect whatsoever on our precious coastline or the supposedly unique view that Nantucket Sound offers. The wind farm is a project whose time has come!

Sincerely


Stratton Haskell

66 Squirrel Run

Yarmouth Port, Ma 02675

3903

Rustin McIntosh
15 Stimson Street, Apt. 16
West Roxbury, MA 02132
617-469-0712

2-18-05

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Kirk-Adams:

I want to send this letter in support of the proposed Cape Wind project. I understand this project is controversial, and yet having spoke to those who are against it, and having researched the arguments against it, have come to the conclusion that the benefits from this kind of renewable energy production far outweigh any negative effects that it may have.

Specifically, its hard for me to believe that it would discourage people from visiting the Cape, since the wind turbines that get installed would be far enough off shore so that they would only be visible on a clear day, seen way off on the horizon. People on Nantucket have opposed the Cape Wind initiative, in spite of the fact that they would never even be able to see the machines from Nantucket – they are too far away. Suburban-style growth in some areas of Cape Cod has been rampant in the past 15 years; its seems strange that so much opposition has been generated in this area by a set of wind machines that would be barely visible from only one part of the Cape's coastline.

I have heard many arguments against the Cape Wind project, but a closer look made them appear to be based on unrealistic fears and misinformation. Many of the arguments against the project have been refuted by the environmental impact study. I will not go into all of them in this letter, but I remain convinced that if the project goes through, everything will be fine, and it will be a great step forward in large-scale renewable energy production.

Many European nations have huge installations of wind turbines both on and off shore, without negative impacts to the environment or tourism, and without the public opposition that seems to accompany many proposed wind turbine projects here in the USA. Hopefully we can follow in their example, something the USA badly needs to do, to reduce its dangerous and expensive dependence on imported oil and fossil fuels in general.

Thank you,

Rustin McIntosh



RECEIVED

FEB 24 2005

U.S. ARMY CORPS OF ENGINEERS

MARITIME TRADES COUNCIL OF GREATER BOSTON AND NEW ENGLAND AFL-CIO



27 DRYDOCK AVENUE - BOSTON, MA 02210 (617) 261-0790 FAX (617) 261-0791



Karen Adams
Cape Wind Energy Project EIS Manager
U.S. Army Corps of Engineers
New England District
Regulatory Division
696 Virginia Road
Concord, Mass 01742-2751

February 22, 2005

RECEIVED
FEB 23 2005
MARITIME TRADES COUNCIL

M.T.D. Affiliates

- Boston Plasters & Cement Masons
Local #534
- Building & Construction Trades Council
of the Metropolitan District
- International Brotherhood of
Electrical Workers
Local #103
- International Brotherhood of
Electrical Workers
Local #223
- International Brotherhood of
Firemen & Oilers
Local #3, SFIU
- International Longshoremen's Association
- International Organization of
Master, Mates & Pilots
- International Union of Elevator
Constructors Local #4
- International Union of
Operating Engineers
Local #4 & It's Branches
- Massachusetts AFL-CIO
- National Maritime Union of America, SIUNA
- Painters & Allied Trades
Local Council #35
- Pile Drivers Local Union #56
- Pipelitter's Association
Local Union #537, U.A.
- Seafarers International Union of
North America, AFL-CIO
- American Maritime Officers
- Sheet Metal Workers
International Association
Local Union #17
- United Brotherhood of Carpenters
and Joiners Millwright Local #112.1

RE: Cape Wind

FROM: Dan Kuhs
Vice President Maritime Trades Council

Our organization represents seventy thousand unionized workers engaged in marine and maritime related industries. Skilled local workers that range from fishermen, to merchant mariners, dock workers, dredge and ferry workers, pile drivers and many other marine and building trades personnel. My responsibility is to these individuals that make their living on the water. It is with that responsibility in mind that we have studied the Cape Wind project to determine if this proposal is in the interest of the members that we represent. The potential development of any maritime opportunities deserves objective scrutiny and unbiased perspective. Therefore, we set out on a thorough review of the potentials of the wind industry and the viability of Cape Wind. We sent representatives to numerous public hearings and to the Massachusetts Technology Collaborative's Cape and Islands Offshore Wind Stakeholder Process. We listened to the testimony of Government officials and third party experts and reviewed the published results of the MTC process. We have reviewed the Draft Environmental Impact Statement released by the Army Corps of Engineers. We feel that the stringent regulatory process that the project is currently going through, thoroughly addresses any environmental and sitting issues. Upon completion of our review of the Cape Wind project, the Marine Trades Council has unanimously endorsed Cape Wind because of the overwhelming environmental and economic benefits of this renewable energy project.

Cape Wind will benefit our economy. Energy is the cornerstone of our economy, representing 10% of our gross domestic product. However, in 2002, the United States spent about \$103 billion dollars outside the country for oil, creating a trade deficit that would not be tolerated in other economic sectors. The Department of Energy predicts that domestic oil production is expected to decrease. Every dollar spent on energy imports is a dollar that the local economy loses. Renewable energy resources, however, are developed locally. The dollars spent on energy stay at home, creating more jobs and fostering economic growth.

~~3904~~
3904

Cape Wind will create substantial maritime construction jobs. Results of the New York State Office of Energy Study show, renewable energy technologies are labor intensive, creating 66% more jobs than natural gas facilities and 27% more jobs than coal facilities. A recent study reports that Cape Wind will generate an estimated 600 to 1,000 jobs. State economic output will increase by between \$85 million and \$137 million annually, and labor income will increase by between \$32 million and \$52 Million annually.

Additionally and as important to our membership is the positive impact the project will have on the environment. The completion of this project will result in a power generation system that is pollution free, as our Nation is facing serious energy supply challenges, air quality and global warming concerns, and continued dependency upon foreign fuel sources; it is time to encourage the development of clean and renewable energy projects like Cape Wind.

Many of the trades represented by the Maritime Council have historically worked in an industry noted for respiratory illness and disease, for these reasons our membership looks forward to constructing and maintaining this non-polluting energy source as their contribution to a cleaner environment for both them and their families.

It is critical that the Army Corp of Engineers maintain their role as the Federal Authority in permitting this project and not be unduly influenced by various State Agencies that have no authority in this project beyond what is their legal jurisdiction of state waters (i.e. Cape Cod Commission, and the Energy Facilities Siting Board).

We ask that the Cape Wind project not be held to a higher standard than similar offshore construction projects, such as the Deer Island outfall diffuser project. This project was met with similar protest by a vocal minority on the Cape and Islands; it has had no adverse environmental impact, but it continues to show a positive effect on the quality of Massachusetts Bay waters.

Sincerely,



Dan Kuhs
Vice-president
Boston & New England
Maritime Trades Council

* I may be reached at 617-443-1988 / E-mail drk@piledriverslu56.org for any further comments or questions.

3905

3
9
0
5

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742
wind.energy@usace.army.mil

February 21, 2005

RE: DEIS on Cape Wind Energy Project

Dear Ms. Kirk-Adams:

I am against placing a wind farm on Horseshoe Shoals in Nantucket Sound for the following reasons:

1. Fundamental Economic Incompatibility - For the Cape, the Islands and surrounding waters, aesthetics ARE the economy. The Cape and Island economy is driven by tourism, which in turn is driven by the tremendous access to open and pristine water and the natural environment. The throngs of city dwellers who come, do so precisely to escape the industrialized urban environment. A 24-square mile array of 417-foot towers plus transformer is by its industrial nature incompatible with the economic engine of this region. The navigational lights will also create light pollution at night. Massachusetts State Governor Mitt Romney has noted the importance of the pristine beauty of this region and come out against the project for this reason.

2. Zoning Incompatibility - A large, permanent industrial development does not belong in an area that already has a two primary uses -- fishing for over 400 years and recreation for more than 100. While fishing is an industry, it is not a permanent installation on the water and is highly regulated.

3. Lack of Regulation - Because this project would be a first in U.S. waters there are no regulatory standards over such a large industrial facility in our ocean environment. Allowing such a development to proceed without creating discussion, regulation and oversight at the national level and state level would violate the best interests of the public, whose waters these are. There is also a question, according to Massachusetts State Attorney General Thomas Reilly, as to whether the Army Corps should be the entity to oversee this issue. Reilly is quoted in the February 19, 2005 Cape Cod Times article "The primary legal issues in the case, I believe, is that the Army Corps lacks the legal authority to give away the seabed, absent Congress granting that authority."

There are ample examples from our country's history to show that a lack of regulation can lead to abuse and disaster. To take one example, go back to the 1960s when huge factory fishing ships from all over the world descended on the waters offshore of New England and with no constraints, decimated fishing stocks. By the time regulations were established with the now famous 200-mile limit of 1976, "it was too late to avoid virtual collapse of many ground fish stocks." according to a historical summary by the National Oceanic and Atmospheric Administration. The collapse of those fishing stocks is still felt today.

Because of the importance of the ocean environment as a food source, the time to regulate major ocean activities is before a new industry is established, not after any possible damage is done.

4. Underestimation of Salt Water Corrosion as a Cost Factor - In its discussion of the reliability of various alternate energy sources, the Army Corps report does not bring up the issue of salt water corrosion in its reliability assessment of wind power generation (Section 3.2.2.6.1.) However this problem is discussed under tidal generation reliability (Section 3.2.2.2.1) as follows: "...operation of mechanical equipment in the saline environment (I.e. corrosion), along with the potential impacts of severe ocean storms on the equipment, creates concerns with long term reliability. Any structure located in a marine environment would need to be constructed to withstand ocean storms and use materials that can withstand exposure to the saline environment.Incorporation of these design principles results in high capital costs and increases costs of the electrical energy produced."

~~3095~~
3
9
05

The Wind assessment of current technology section (3.2.2.6.2.) notes the expensive foundations required for offshore wind arrays can run costs up to 30 to 60 percent higher than land based systems. The report says that due to stronger winds offshore, higher electrical production will offset the higher installation costs over the life of the facility. But no supporting information is offered for this statement. According to the executive summary (Section 1.5.3.) Cape Wind did not initially plan to install sacrificial aluminum anodes until several years into the project, after they anticipated corrosion would appear. The summary notes that was changed in 2004 to install anodes immediately. This may indicate lack of attention to the corrosion issue.

5. Obstructing a Natural Migration Highway - The report gives inadequate attention to the fact that this location is right in the middle of the Atlantic Flyway, a major bird migration route. Nantucket Sound, is according to an advocacy group, home to one of the highest concentrations of wintering ducks in North America.

6. Overestimation of Direction Benefit to the Cape and Island - Any power from such a project will go into the general grid and has no direct benefit to the Cape and Islands. Why should a region be asked to damage its primary economic engine -- the pristine water environment -- for no direct benefit.

7. Experimental Nature of Proposed Wind Farm - While wind farms have been in use for a number of years overseas, it is still a new technology. Newsletters from the New Alternatives Fund, a mutual fund that invests in alternative energy companies, report routinely on the wind projects in Denmark. They noted in their 2nd Quarter 2004 Newsletter that the wind turbine company Vestas "has had problems with its turbines well offshore Horn Reef on the Danish coast. At significant cost they are dismantling the turbines for modification. There may be additional unforeseen costs to offshore power generation that are not addressed in this report.

8. New England Grid and "Transmission Bottlenecks" It is also clear from the report that regional issues with the transmission grid in New England must also be addressed if additional power generators of any kind are to be added in the future. But as it stands currently, the transmission "bottlenecks" prevent a realistic assessment of alternative land-based sites in New England.

For all these reasons I urge the Corps to deny approval of a permit for this project. Wind power is an extremely interesting technology, and there is currently a lot of focus on it, both in the United States and abroad. But just because it is interesting, and just because one private company has a project they would like to use to make a profit with, is no reason to allow approval of a completely incompatible and inappropriate project site, nor permit an unregulated industry in public waters that have primarily served as rich fishing grounds and a pristine recreational environment. It is a premature attempt to secure the wrong site.

What is needed is a thoughtful look at our ocean environment rather than blindly opening it to a trendy wind energy boom that might lead to a bust and could cause harm.

The issue of open water here is not trivial, it is primary.

Sincerely,


Gayle Ashton
P.O. Box 1671
Eastham, MA 02651

cc: a copy will also be transmitted via email

President's Day 2005

3906

To: Karen Adams
Cape Wind Energy ETS Project
USA Corps of Engineers
696 Virginia Rd
Concord, MA 01742

From: Herb Luther
92 Overlook Circle
WALQUOIT, MA
02536

I live on Cape Cod. Before that in Acton and Stoneham MA. for over 30 years in this state. I am upset with energy shortage problems. These issues must be solved. The Cape Wind proposal solves no problems, costs not borne by anybody other than the tax payers. It is misguided as a policy or strategy. Bill Delahunt says it best... "It is as if to save the environment, we must degrade the environment" How sad to think about. Most certainly there are better ways to solve energy problems (Reduce automotive consumption and pollution at the same time for instance) However, no insiders get rich on that account.

Simply put, this project must be stopped. Our oceans are in significant danger already. I support the efforts of Gov. Romney and AG Riley to these ends.

Many lawyers and politicians have argued this issue from all points of view. The Corps of Engineers has operated against any stewardship of the environment that a common sense person would expect.

The government should be protecting the people and the environment and all living creatures in this pristine area.

Herb Luther

3907

Karen Kirk-Adants
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742
wind.energy@usace.army.mil

February 21, 2005

Dear Ms. Kirk-Adams:

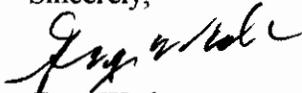
Regarding the Cape Wind Energy Project: There's a lot going on in Nantucket Sound that nobody realizes. People are making a living there that don't go to town meetings and they don't worry about bird flights or flyovers from Hyannis to Nantucket, or New Jersey to Martha's Vineyard. However, they do pay attention to fish migration and it's a very finicky environment.

All fish, from giant tuna to little creek chubs are sensitive to top water predators and that's what these wind towers are. Even the wind can spook the schooling fish. And therefore these goddamn 400-foot towers will create a sense of top-water predation that should be addressed. If the fish sense a predator, they split, they get away. Birds fly over a school and the next thing you know, they disappear. These wind towers will disperse the schooling fish, the big schools, the herring and the mackerel. It is illogical to think otherwise.

They come up on the shoals to breed and to be in a somewhat temperature-controlled environment and these bastards are putting rows of Provincetown Monuments over the shoals. Its wrong. It's a food source and it has been for hundreds of years. It should be utilized.

These people are grabbing the land and when they go toes up who foots the bill for the clean-up? They express no responsibility from the start for anything other then themselves and the average taxpayer like myself has to foot the bill for the clean-up after they quit.

Sincerely,



Greg Wade
P.O. Box 149
South Orleans, MA 02662

RECEIVED
FEB 21 2005
NEW ENGLAND DISTRICT



FOX SPORTS TELEVISION GROUP
A UNIT OF FOX ENTERTAINMENT GROUP

3908

P.O. Box 900
Beverly Hills, California 90213-0900
Phone 310 369 6300 • Fax 310 969 6230

MEMORANDUM

DATE

CLASSIFICATION

David Hill
Chairman and
Chief Executive Officer

February 18, 2005

Dear Karen Kirk-Adams,

We urge you to reconsider and help protect
Nantuxet Sound from private developers.

This is a major mistake and akin to putting
an industrial complex in the middle of
the Grand Canyon.

Please add our names to the opposition of
development of one of America's most
treasured natural resources. Please protect
our future legacy and think longterm, not
short.

Please contact us for further assistance to
help develop thoughtful and strong policy.

Sincerely,

FOX NEWS CORPORATION COMPANY

David Hill

3909

29 Prince St.

Harwich, Ma. 02645

US Army Corps of Engineers
New England District
Cape Wind Energy EIS Project
Attn: Karen Kirk Adams

My wife and I, Alice and Robert Miller, would like to voice our complete approval of the proposed wind farm in Nantucket Sound. Cape Cod should not be forced to put up with a dirty power plant that is now operating in a condition of bankruptcy. We see no harm to the point or those who possess this resource for personal or commercial purpose. The sound belongs to everyone.

We have driven along the shore of the St. Lawrence River in Canada and there have seen

hundreds of wind mills all
working for the benefit of the
public. Many of these mills are
directly in people's backyards
as close as 300 ft. Think
of that as opposed to 5-6 miles
away. Makes one wonder if
those objecting have something
to gain by their opposition.
The view from shore will
change almost none. Let the
project go forward for the
benefit of all.

Sincerely yours
Robert H. Miller

3909

3910

Dear Ms. Kirk-Adams

The Cape Wind Project is an excellent idea and if completed will be a huge step into the future of alternate energy. The project will contribute greatly to the cost of energy therefore becoming very beneficial to the community. Some people claim the project will be an eyesore but in my opinion the wind farm will enhance the area and become a tourist attraction for people all over the world. If this project is completed the benefits of it are countless it will be a project that will provide for the community for generations to come.

Sincerely

Steve Zariczny

3910

2/17/05

Dear Karen Kirk-Adams,

Our class has been researching the Cape Wind project for the past few weeks in class and I feel that this is very beneficial to the future of the Cape.

If the future power to the cape could be up to 75% wind generated, it could show the rest of the world how significant the aspect of renewable energy sources could be.

Thanks
Student in Fuel Cell & Alt
Energy Class
Ponaganset High School, Gloucester
RI

3910

Dear, Karen Kirk Adams

The Cape Wind Project is a great idea. This project will help to serve 75% of the Cape's energy needs. This will be very beneficial to the community, and if all goes as it should, this project will promote more projects like this. Our class has been researching this project for the past month, and we haven't been able to come up with enough information to not go forth in completing the project. There has been nothing but good information coming from this project. I feel as this project grows closer to completion there will be a greater amount of support to this alternate energy project.

Sincerely,
Penagasset High School Student
J. Tison.

3910

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
US Army Corps of Engineers NE District
696 Virginia Road
Concord MA 01742

Dear Ms. Kirk-Adams,

I strongly support your proposal for the Cape Wind project. Not only will the wind farm provide incredible amounts of alternative energy but also will attract more tourism to the Cape.

Some people claim that the wind turbines will disturb the serenity and aesthetic value of Nantucket Sound. However wind turbines only produce 60 db of sound which is quieter than the average conversation. They will only be seen as a small half inch speck in the distance, the people who are opposed to the project cling to the fallacy that they will make the view ugly or foul. It is disgraceful that some people take a firm stand against an ecologically feasible plan that will produce ~450 MW of emission free energy.

In this day and age our electricity and fossil fuel usage is far greater than that of many nations combined. NE are heavily dependent on foreign oil for both transportation and energy production. Limiting oil use in energy production helps both the environment and our fluctuating economy. Our fuel cell technology class of progress is high school is 100% behind your efforts and willing to help you in any way.

Thanks so much for standing up for the planet!

Sincerely,
Elias Whitman

3910

Karen Kirk-Adams

Cape Wind Energy EIS Project

US Army Corps of Engineers, New England District
696 Virginia Road, Concord, MA 01742

I am a strong supporter of the Cape Wind Project. The advantages to this project are enormous. In this fuel cell class we have gone over the issue and even had a debate about them. I would like to see the Cape Wind Project go into effect because the power it would make would be enough to power 75% of the Cape. Also I think it would be an incredible sight to see because I think windmills are awesome. I hope that this project succeeds.

Sincerely,
Jacob G.

3910

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, NE District
696 Virginia Road,
Concord, MA 01742

February 17, 2005

Dear Karen Kirk-Adams,

I am enthusiastically in favor of the Cape Wind Project. I strongly believe that a wind farm off of the coast of Cape Cod will enhance this nation's life span by renewing energy, instead of consuming dangerous fossil fuels, which will be extinct within 500 years. Today's future depends on the motivation of people worldwide, and I believe that the results of the wind farm will demonstrate the beneficial virtues that one society must have to be helpful to the future of this world. The United States is the world's largest emitter of Carbon Dioxide, and an opponent of the Kyoto protocol. A wind farm off the southern shores of Cape Cod will transform the views of today's society and help change the pathway to the future.

Thank you for taking the time to read this letter, and thank you for allowing me to express my opinions about the Cape Wind Project.

Sincerely,

Matt R.
Bourne High School

3910

Dear Ms. Kirk-Adams,

As I understand it, you are supporting the Cape Wind Project. I just wanted to give my support to you, for what it is worth; from an 18-year-old kid. I have been researching windpower for a long time, and I speak for fellow teens when I say that windpower is a great new way to produce energy. Also, most kids I know think they look cool, unlike the people who complain of "eye pollution". I do not understand that, nor do I understand how the fishermen say they cannot fish. The wind turbines would be approximately $\frac{1}{3}$ of a mile apart, and that is plenty of room to fish between.

I cannot hope to sway you with this single letter, but I want you to know that supporting Cape Wind is the right thing to do. We're going to have to convert to that type of energy anyway, why not now?

Sincerely,
Philip T. Sparks
~~Philip T. Sparks~~

→ of Foxgasset
High School, in
Glocester, RI

3910

Dear Ms. Kirk-Adams,

I am a Junior at Ponaganset High School in Gloucester Rhode Island. Currently, I am participating in Mr. McCurdy's fuel cell class. We have been learning about the Cape Wind Project and I think it is a great idea. Wind turbines are an excellent alternative energy solution. With fossil fuels availability on the decline an idea ~~like~~ like this can change the future. I know there has been much opposition to the whole project, but there are many factors to look at. These wind turbines have a low noise impact, no pollution, and practically no negative impact on the environment. We as a society need to help protect the environment for the future, and the Cape Wind Project is the way to do it.

Sincerely,
Patrick Charost

3910

To: Keren Kirk-Adams

2/17/05

I am a sixteen year old high school junior currently participating in one of the first schools to offer a fuel cell and energy conversion class. Participating in this class leads us to investigation of wind turbines or wind farms. I am most everyone in this class are big supporters of this cape wind project. Our interest in this project is mass and would love to help in any way to help this project to come about. I personally would love to see wind turbines in the distant future. As you may have heard paragonet is building a new school and are trying to put a wind turbine on sight. As a school we successfully built RI first fuel cell powered vehicle. It is currently called a quadacycle. Our next project is based on taking a hot rod model into a fuel cell powered automobile. I wish you all the luck needed.

Sincerely
Timothy Lounge

Steven DiPippo

3910

Karen Kirk-Adams

Cape Wind Energy EIS Project
US Army Corps of Engineers, New England District
696 Virginia Road, Concord, MA 01742

I am an absolute advocate of the Cape Wind project. Our class has done extensive research on this subject and decided that the pros of this construction far outweigh the cons. Though the main purpose of our class is not directly aimed at wind turbines, the entire class shares a common environmentalist view. We aim to study the ways in which we as a nation can utilize renewable energy in everyday life. That is why we feel the Cape Wind project would be an utterly significant step towards the benefit of renewable fuel.

Sincerely,

-Steve DiPippo

Senior of Ponaganset High School

Ross McLordy's Fuel Cell Technologies Class

3910

Karen Kirk-Adams,

I am a student at Ponaganset high school, at which we have an alternate fuel course. Our major focus is hydrogen fuel cell, but we also look at air power. As a class we feel that the Cape Wind project will be hugely successful. Wind power is an excellent source of clean fuel, our school is actually looking into getting a wind turbine to help power the school. That ~~a~~ combined with our solar panels, will not only produce energy for our school, but also return funds. We feel that the Cape Wind project will be a great stepping stone that will catapult us to a new era of a clean alternative fuel economy. We have high hopes for the future of alternative fuel, and we are working to make better future.

Respectfully,

Period D Fuel Cell
Ponaganset High

3911

Capt. Norman F. Wahl

9 Bluenose Lane Osterville, MA 02655
Phone 508-420-9455 Fax 508-420-7172

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

02/22/05
10:11 AM
KIRK ADAMS

Date: February 23, 2005

Re: Public Notice NAE-2004-338-1

Sheet #1 of 18 places the Wind Farm Project on NOAA chartlett #13227. The chartlett nautical mile scale would indicate 1 minute of latitude for each nautical mile.

The chartlett distances indicated appear to be statute miles on the NOAA Nautical chart. It is my opinion that nautical miles should be used on a nautical chart for true evaluations and proper distances.

The statute mile scale appears to show that the proposed project is further offshore than it really is.

Examples:

1. Cotuit is indicated as 6.0 miles when in fact it is 4.93 nautical miles.
2. The Osterville Cut is only 4.4 nautical miles
3. Point Gammon is indicated as 4.7 miles and it is only 3.95 nautical miles.
4. The distance to Nantucket is indicated as 13.8 miles and it is only 11.98 nautical miles.
5. The distance to Cape Poge is only 4.77 nautical miles.

In view of the fact that nautical miles are common to a nautical chart and the chartletts do not indicate statute miles it is my opinion they are misleading to the public.

3911

Ice conditions can prevail in Nantucket Sound during severe winter periods. It is my opinion that this has not been properly addressed nor have proper comparisons been made.

Having sailed on Nantucket Sound during winter months I have experienced severe ice conditions that have not been addressed.

Reference:- Publication "The Island Steamers", Page 153 and 154, inclusive of photos.

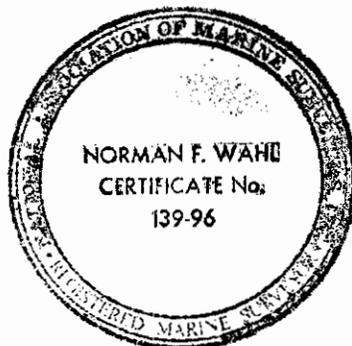
Reference:- Dutton's Navigation and Piloting, Naval Institute Press. Ice will layer and pack with wind and tidal flow especially when it has stationary objects to layer against, i.e., 130 towers.

Fog prevails at times in Nantucket Sound and statistical data is available as respects these conditions. It is my opinion that the 130 towers would present radar targets and "echos" that would present navigational problems of great magnitude. I have investigated maritime casualties for many years and this proposal appears to be an area of potential disaster regarding marine traffic small and large. Transmission cables, too, can produce false radar targets on a radar screen.

I trust that you will not issue a permit to build these towers as proposed in the pristine waters of Nantucket Sound.

Sincerely,


Capt. Norman F. Wahl, C.M.S.



3912 ✓

Laura Wasserman
3 Fifth Way
Nantucket, MA 02554
dolphins@nantucket.net

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: Final Comments on the Cape Wind Project Draft EIS

Dear Ms. Adams,

First, I would like to thank you and the Army Corps of Engineers for your diligence and for the comprehensiveness of the Cape Wind Draft EIS. I was happy to see such a highly favorable report, as I am a strong supporter of this project. I would like to add the following comments, which are offered as suggestions to strengthen the Final EIS for the benefit of public understanding of the Cape Wind project. Please note that I have only read the 26 page summary and not the full 4,000 page report.

Protected Marine Mammal Species

While you state that the sound levels anticipated during construction are below the 180 dBL threshold level, I am wondering if it's possible to include the actual sound levels of construction, perhaps using examples of projects past, as well as including decibel levels produced by the vibration of the turbines during routine operation.

Avian Resources

It may be helpful to include bird impact studies from wind farms already in operation, for example the offshore wind at the Horns Rev, Denmark, to estimate bird loss, collision, flight pattern changes, etc. In addition, it may be helpful for the general public to put bird impact and loss in perspective with other forms of bird loss. That is to add that the top known offenders that kill no less than 100 million birds annually each are glass windows, automobiles, house cats and hunters, not to mention that the #1 threat to birds is global warming.

Estimated Health Benefit to Wildlife

In addition to the health benefits to humans already addressed in the DEIS, I suggest that you add a section on the estimated health benefits to wildlife. One example is the reduction in bird and shellfish harm due to oil spillage from barges and tankers delivering fuel oil to electrical generation plants that pass through the Cape Cod Canal or in waters off Massachusetts. You might cite the recent oil spill in Cape Cod Canal that killed no

3912

less than 450 birds. In addition, the externalities of coal mining impact on habitat in other areas of the U.S. are another area of concern that should be addressed.

Cultural and Recreational Resources/Visual

While I understand that the appearance of a wind farm would constitute an alteration of the historic character and view, again, I think it is important to put these changes in perspective. Electrical wires, telephone poles, airport navigational lights, nighttime football game lights, cell phone towers, and more, are all historical alterations and visual impact that we tolerate. I think it's important that these comparisons be made.

Global Warming

I would like to see a much more comprehensive explanation of global warming, the use and emission of fossil fuels as a contributing factor, and the way in which the wind farm and other renewable energies can offset that. Global warming is causing a rise in sea level that has a direct effect on the Cape & Islands. Nantucket is currently losing land at a rate of at least 6 acres per year according to the Woods Hole Oceanographic Institute, and this does not include land lost to storm damage. This is a very substantial loss, and I think it is significant enough to be included in the report. The #1 contributor to global warming is fuel combustion and carbon dioxide emissions. The wind farm will displace one million tons of carbon dioxide annually. This wind farm is a significant way that we can stem global warming in our region.

Impact on Tourism

The Final EIS should augment its discussion on the impact on tourism by citing the experience of currently operating offshore wind farms in Europe and Canada, and even land based wind farms, such as the one in Palm Springs, California, which draws two tour buses a day. There seems to be an anticipated fear on the Cape & Islands that a wind farm will hurt our ever-needed tourism, and yet evidence is to the contrary. For example, the North Cape Wind Farm on PEI draws 60,000 visitors a year, and with the development of a new wind interpretive center, the goal is to attract 100,000 visitors annually. In fact, the neighbors of the North Cape Wind Farm oppose a new wind project on the eastern side of PEI for fear it will siphon tourists away from their part of the island.

Thank you for your time and consideration.

Sincerely,



Laura Wasserman
Nantucket

FEB. 24, 2005

3913

MS. KAREN ADAMS
PROJECT MANAGER, REG. DIV.
ARMY CORPS. OF ENGINEERS
696 VIRGINIA RD.
CONCORD, MA, 01742

RE: NANTUCKET SOUND WIND PROJECT.

TO WHOM IT MAY CONCERN:

WE OPPOSE THE CURRENTLY PLANNED "WIND-
MILL" PROJECT. WE DO NOT OPPOSE THE SERIOUS
SEARCH FOR EFFICIENT WIND POWER SOLUTIONS.

THERE ARE STILL UNANSWERED AND UNEXPLORED
QUESTIONS REGARDING THE DESIGN TECHNOLOGY AND
THE SITE OF THIS PROJECT.

THE DESIGN OF THE WINDMILLS IS MERELY A
HUGE VERSION OF OLD/FASHIONED SMALL ONES.

HOWEVER SIMPLY ENLARGING EXISTING DESIGNS
TO ADAPT THEM FOR VASTLY LARGER USES NEVER
WORKS WELL AS AN ENGINEERING PRINCIPLE.

PERHAPS THIS IS WHY SUCH A HUGE PROJECT
WILL PROVIDE SO LITTLE ACTUAL POWER.

(THE PROPONENTS HAVE STATED THERE WILL NOT
EVEN BE ENOUGH ADDITIONAL POWER TO ENABLE THE
CLOSING OF THE PLYMOUTH NUCLEAR PLANT - A SOURCE
OF PRESENT AND CONTINUING POISON FOR ALL FUTURE
GENERATIONS!)

ONE PERSON WHO SPOKE AT THE VINEYARD

HEARING SUGGESTED THAT NEW DESIGNS ARE
IN THE WORKS, AS FOR INSTANCE ONE WITH ROTORS
ENCLOSED IN CYLINDERS" ?

WHAT ABOUT THE PHENOMENON OF SPACES
THAT ENHANCE ACTUAL WIND SPEEDS & STRENGTHS,
AS DO TUNNELS + SKYSCRAPERS IN CITIES DO??

WHY MUST WE USE "WATER" SPACE HERE IN U.S.
OF COURSE EUROPE, INCLUDING DENMARK, MUST
USE WATER SITES BECAUSE THEY HAVE NO LAND!
BUT THE U.S. DOES HAVE MANY POTENTIAL LAND
TO USE FOR MORE CREATIVE EFFICIENT WIND USE
PROJECTS.

PLEASE DO NOT APPROVE THIS POTENTIALLY
OBSOLETE, ENVIRONMENTALLY RISKY, HUGE EXPERIMENT
FOR NANTUCKET SOUND.

Desmond W. Margetson

DESMOND W. MARGETSON,
ENGINEER

Ann L. Margetson

ANN L. MARGETSON
ARTIST

P.O. BOX 1732, OAK BLUFFS, MA, 02557

C.C. TO REPS.

3914

Lawrence P. Cole, PhD
3 Parsons Path
Harwich, MA 02645+3307
larrcole@cape.com
(508) 432-2464

February 20, 2005

Reference file # NAE-2004-338-1

Cape Wind Project EIS Manager, Karen K. Adams
U.S. Army Corps of Engineers, New England District
Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

In 2002, the Cape Light Compact commissioned a study to project the growth in demand for electricity on Cape Cod through 2015. The finding was a 30% increase from then current levels. While the Compact would like to reduce that figure by conservation measures, and have much of the balance produced by distributed generation, it was recognized that an additional utility-size facility might be needed in the region. The Cape Wind project would fulfill a significant part of that need. It would also displace a fossil fuel plant that would otherwise have to be built to generate the equivalent amount of power, and thus would either eliminate some incremental demand for scarce natural gas, or eliminate harmful emissions from the use of oil or coal.

To put the proposed project in the proper context requires recognizing that the world now appears to have entered an era of permanently higher fuel costs than those that prevailed in the 1990s. OPEC has become quite comfortable with \$45-50 per barrel oil prices, and shows no interest in returning to benchmark prices for oil in the \$22-25 per barrel range. Indications are that the new benchmark will be in the \$32-38 per barrel range, plus an uncertainty premium of \$10-15 per barrel as long as hostilities continue in the Middle East. There are also articles in the business press almost weekly about China and India negotiating long-term contracts for oil and natural gas, even next door in Canada, in order to satisfy their rapidly growing demands for fuel. Thus, the development of renewable energy resources in the U. S. is essential to keep power prices from escalating and our country from becoming increasingly dependent on oil and gas from politically unstable parts of the world.

The studies cited in the Draft EIS make clear the numerous and substantial benefits of the project to the regional power pool managed by the Independent System Operator, to the Cape Cod economy and to air quality in the region. In particular, the description of the way in which the ISO manages the bid stack and how adding a zero-marginal-fuel-cost power supplier to the stack would have a downward effect on prices is exactly right. The economic impacts are based on conservative assumptions about future fuel costs and are therefore credible.

Given the conditions of the fisheries and of cranberry agriculture, and the low wages paid in the tourism and retail sales sectors, failure to develop Cape Cod's wind resources on appropriate sites would be a huge mistake. In my view, the Corp's review establishes that Horseshoe Shoals is one such site, one whose entire footprint constitutes about one half of one percent of Nantucket Sound; hardly a huge sacrifice of pristine whatever.

Yours truly,


Lawrence P. Cole

SEARCHED
SERIALIZED
INDEXED
FILED
FEB 23 2005
FBI - BOSTON

3915

Ronald A. Patrick
P.O. Box 1313
Orleans, MA 02653

February 22, 2005

Ms. Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

There are a number of reasons why building a wind farm on Nantucket Shoals makes sense, and these have been discussed at length during the past months of discussion about this vital project. These include the fact that the proposed site has been proven to be a prime source of steady wind energy and that energy produced by clean, renewable means will reduce our dependence both on foreign oil and on coal, a notoriously dirty energy source, thereby reducing pollution and the asthma and associated diseases with which it is associated. But there is another reason that deserves consideration, and it is one that I have not heard anyone mention during the recent debates. That is the concern that world-wide oil production has peaked, or is peaking right now, as pointed out by Matthew Simmons, an energy investment banker with Simmons & Company, International.

Mr. Simmons has a profound knowledge of oil production and related costs. One of his predictions is that the further increasing of oil well output will damage the wells and the well fields. His concerns will be further explained in his forthcoming book due out in May - "Twilight in the Desert": The Coming Saudi Oil Shock and the World Economy".

It seems to me that those folks on Osterville shore who oppose the wind farm because of frivolous concerns about the preservation of their view ought to read this book with full understanding of its implications for the future and get behind the construction of the proposed wind farm because we need the best and cleanest source of energy, and that is wind power.

Sincerely,



Ronald A. Patrick

3916

Adams, Karen K NAE

From: Walsh, Marty (HELP Committee) [Marty_Walsh@help.senate.gov]
Sent: Wednesday, February 23, 2005 2:57 PM
To: thomas.l.koenig@usace.army.mil; Adams, Karen K NAE; Energy, Wind NAE
Cc: Shalgian, Graham (Kennedy)
Subject: Senator Kennedy's Statement for the Public Comment Period regarding Cape Wind

Attached is Senator Kennedy's statement for the public comment period regarding the DEIS for the Cape Wind Project. If you have any questions, please call Marty Walsh at (202) 224-5094 or Graham Shalgian at (617) 565-3181.

Thank you,

Marty Walsh

3916

Colonel Koning, I would like to submit my statement for the public record on the proposed Cape Wind Project in Nantucket Sound.

As an elected official representing the people of Massachusetts and as a life long resident of Cape Cod, I strongly oppose the Cape Wind Project in Nantucket Sound. It raises significant questions about the private development of public resources and the impact on local ecosystems and economies.

There is no inconsistency when I say I support renewable energy in all its forms, including wind energy, as a means of reducing our dependence on foreign oil and protecting the environment. Wind energy needs to be an important part of the nation's energy strategy, but it has to be carried out in rational and cost-effective ways. That principle is well-established. Strict rules apply to both on-shore and offshore oil drilling, and we need similar rules for wind farms. Environmental considerations are increasingly important. That's why I strongly oppose oil drilling in the Arctic National Wildlife Refuge. Our country has many places whose beauty and natural environment are worth fighting for and preserving.

It's hardly a new battle. A century ago, President Theodore Roosevelt was appalled by the devastation that the industrial-revolution was causing on lands and rivers. He led a landmark effort to set aside special places as National Parks to prevent their development and let future generations enjoy their beauty too.

The Cape Wind proposal calls for 130 wind turbines, each 420 feet tall, supported by steel piles driven almost 100 feet deep into the floor of Nantucket Sound. These massive structures would be spread out over 24 square miles, roughly the same size as the island of Manhattan. In the middle of this new industrial park in the Sound would be a ten-story building with an energy transformer containing over 40,000 gallons of highly toxic oil coolant as part of the process needed to turn the wind energy into electrical energy for transmission by cables to the mainland.

I strongly believe that Nantucket Sound is a resource that is worthy of protection. This is not the first time that elected officials in Massachusetts have attempted to protect the Sound from unwise development. In the 1970's, the state legislature made the Sound a State Marine Protected Area. In the 1980's, we put the Sound on the list to become a federally protected Marine Sanctuary. It's part of our ongoing and longstanding commitment to protect Nantucket Sound, so that future generations can enjoy it as much as we have.

Protecting natural resources and historical sites has a long history in Massachusetts. President Kennedy was proud of his achievement in making the seashores of Cape Cod a National Park. He believed in preserving our national treasures. He saw the need to prevent overdevelopment on the beaches of Cape Cod. Over 5 million people agree today that Cape Cod and Nantucket Sound are true national treasures by visiting it each year.

After growing up and raising my children on the Cape, I understand the unique treasure we have. I identify with the history and the beauty of our state. It is no coincidence that Massachusetts today is a place where people come to obtain an education and stay to live and raise their families. Our hospitals, universities, and public schools rank among the very best in the nation. We are fortunate to be able to attract extremely talent persons of all ages in many different professions, the best and brightest, and an important reason why we do so is the natural beauty offered by our state.

No federal policy authorizes the Army Corps of Engineers to allow off-shore wind proposals to go forward. The seabed of Nantucket Sound is owned by the federal government, not by Cape Wind. The waters of Nantucket Sound are meant to be used and enjoyed by the entire public, not fenced off for private business interests.

In the case of offshore oil and gas projects, private developers are required by federal law to compensate the states for their use of federal lands within a state's boundaries to ensure that the public - not just the developers - benefit from the projects. Louisiana, for example, received over \$40 million in 2001 because of these federal rules, and the federal funds were used to protect sensitive marine areas and support state programs. The Army Corps of Engineers has no authority to grant leases or exclusive rights to use or occupy space on the Outer Continental Shelf.

There is no specific public planning process for determining appropriate off-shore activities. According to the U.S. Commission on Ocean Policy, the Army Corps of Engineers lacks the "management comprehensiveness that is needed to take into account a broad range of issues, including other ocean uses in the proposed area and the consideration of a coherent policy and process to guide offshore energy development."

In the absence of federal law, it makes no sense to allow a "gold rush" off our coastline. Yet, a profit-seeking developer of wind energy has claimed 24 square miles of ocean which millions of people come to visit each year. The area is an economic engine of the Cape's economy, and is currently used heavily by commercial fishermen. Without federal guidelines, it is wrong to allow a single

3916

developer to claim an area that is currently used by others in our state, and is appreciated by so many visitors every year.

The enactment of appropriate federal laws and a sensible management process to establish sites for the benefit of renewable energy will benefit the public and developers alike. The Cape Wind Project should not go forward until we have a genuine ocean policy to protect this great national treasures.

From: jlogan [jlogan@brydenandsullivan.com]
Sent: Wednesday, February 23, 2005 4:00 PM
To: senator@kennedy.senate.gov; William.Delahunt@mail.house.gov; webmaster@ago.state.ma.us; GOffice@state.ma.us; ROleary@senate.state.ma.us; Rep.DemetriusAtsalis@hou.state.ma.us; eleblanc@msoprov.uscg.mil; kblount@d1.uscg.mil; Adams, Karen K NAE; feedback@bostonherald.com; mvtimes@mvtimes.com; letters@projo.com; news@mvgazette.com; Newsroom@ack.net; editor@nantucketindependent.com; capecodder@cnc.com; letters@barnstablepatriot.com; register@cnc.com; Tmurray@senate.state.ma.us; Rep.EricTurkington@hou.state.ma.us; council@town.barnstable.ma.us; bos@ci.mashpee.ma.us; jdaigneault@yarmouth.ma.us; gale_norton@ios.doi.go; contact@fws.go; Brian.E.Osterndorf.col@usace.army.mil; thomas.skinner@massmail.state.ma.us; hroddis@massaudubon.org; frontdesk@capecodcommission.org; watson@mtpc.org; marine.fish@state.ma.us; senator@kennedy.senate.gov; William.Delahunt@mail.house.gov; webmaster@ago.state.ma.us; GOffice@state.ma.us; ROleary@senate.state.ma.us; Rep.DemetriusAtsalis@hou.state.ma.us; eleblanc@msoprov.uscg.mil; kblount@d1.uscg.mil; Adams, Karen K NAE; feedback@bostonherald.com; mvtimes@mvtimes.com; letters@projo.com; news@mvgazette.com; Newsroom@ack.net; editor@nantucketindependent.com; capecodder@cnc.com; letters@barnstablepatriot.com; register@cnc.com; Tmurray@senate.state.ma.us; Rep.EricTurkington@hou.state.ma.us; council@town.barnstable.ma.us; bos@ci.mashpee.ma.us; jdaigneault@yarmouth.ma.us; gale_norton@ios.doi.go; contact@fws.go; Brian.E.Osterndorf.col@usace.army.mil; thomas.skinner@massmail.state.ma.us; hroddis@massaudubon.org; frontdesk@capecodcommission.org; watson@mtpc.org; marine.fish@state.ma.us; Anne Reilly Ziaja (E-mail); Cliff Schechtman (E-mail); Dave Whitney (E-mail); Jeffrey Perry (E-mail)
Cc: Audra Parker (E-mail); info@ecape.com
Subject: Cape Wind Comments including attachments

Importance: High



Cape Wind Spread Sheet 2.xls James S. Gordon Entitles.xls Economics of Wind Power.htm ERC Trading.doc SEFI Wind Farm.pd
 Wind Energy MoneyWind Energy Edison Changing.doc... Electric.pd... More

questions than answers blowing in Wind ...
 There are a lot of unanswered questions about Cape Wind-here's just a few of the things I'd like to know:

Legal
 Cape Wind Associates, LLC is owned by EMI Cape, LLC-why do James S. Gordon and his unnamed investors need the legal insulation of one LLC owning another?

As Gordon's former partner in EMI Grace Park Hotel, LLC, Stanley Weiss learned (the hard way) James S. Gordon knows how to protect himself. LLC members are not personally liable for debts of the LLC-they can incur, but aren't obligated to repay, the companies debt.

In 2004, Weiss filed a lawsuit against Gordon in RI Superior Court. In the complaint, Weiss alleged Gordon said the primary reason he abandoned EMI Grace Park Hotel, LLC was that it was not going to be financially viable. Part of the financial plan was a property-tax break from the city. Gordon told Weiss he establishes "stand alone limited partnerships" for each project financed by "non-recourse" project financing.

That explains why a search of the name James S. Gordon produced at least 12 LLC companies in MA and RI in which he had or has an interest- no doubt there's more here as well as in other States.

Non-recourse project financing-a debt instrument which the lender looks principally to the revenues expected to be generated by the project for the repayment of its loan and to the assets of the project as collateral for its loan rather than to the general credit of the project sponsor. The sponsor

003917

(Cape Wind et al) has no obligation to make payments on the project loan if revenues generated by the project are insufficient to cover the principal and interest payments on the loan.

LLC partners are liable only for the debts and liabilities of the partnership to the extent of their capital contributions in the partnership.

James S. Gordon refuses to disclose financial information for the proposed Cape Wind project. However, if Cape Wind's financial backing takes the form of 100% non-recourse financing-the LLC partners make no capital contributions, so they have nothing to lose-but much to gain in the development of this project.

Good deal-for Cape Wind.

The limited financial liability of partners may also explain why Cape Wind agreed to "gift payments" in the "Host Community Agreement" (page 5 # 13. Force Majeure) with the Town of Yarmouth. It also explains why the agreement includes the clause " if and to the extent that either Party if prevented from performing its obligations hereunder ... such Party shall be excused from performing hereunder and shall not be liable for damages.

Say What?

Cape Wind needs an escape clause just in case the two LLC's don't provide enough protection?!

Risk Management/Insurance Financial Guarantees

Cape Wind has not answered the question of how they plan to insure the wind turbines or liability exposure for damage to the environment or the Cape's economy in the event of a significant "event" at the site. The only reference to insurance I found on the DEIS CD references a section that outlines site security (section 4.8 page 4-22) not insurance.

The DEIS also notes Cape Wind will provide a "financial instrument" to fund decommissioning of the wind turbine site at the end of the project short, yet incredibly prosperous life:

What kind of "financial instrument" does Cape Wind plan to provide-GREEN STAMPS?!

I don't know if Green Stamp trading will pay to dismantle Cape Wind.

However, I do know Cape Wind will be a player in another kind of trading-Emissions Credit Trading and IRS section 29 and 45 Tax Shelter Trading:

Emission credit trading is a regulatory approach to pollution control that emphasizes the use of market forces rather than forced technological compliance to reduce emissions. A regulatory or governmental authority establishes an overall cap for emissions within a pre-specified geographic area. The government authority then allocates the cap in the form of marketable allowance/credits among existing sources of pollution within that geographic area and requires these sources to maintain credits/allowances equal to their actual emissions of the regulated pollutant. In order to meet this requirement, sources have two choices: either reduce their emissions or purchase additional allowances. If a source reduces its emissions below its allocation of allowances, the source can sell the excess allowances. In other words the Mirant Canal power plant can keep polluting at the current level by purchasing "emission credits" from green energy sources like Cape Wind. As long as the region's overall pollution load is reduced it doesn't seem to bother anyone that people like me who live near the Mirant Canal power plant are still breathing carcinogens with no relief in sight-thanks to the amazing commodity conjured up out of thin (dirty air) called Emission Credit Trading.

Tax Shelter Trading

*Federal tax credits available under Sections 29 and 45 of the Internal Revenue Code:

*Encourage investments in projects that are undertaken for tax avoidance purposes rather than sound business reasons.

*Distort private sector capital investments by directing capital to projects with little intrinsic merit.

*Shift tax burden from highly profitable organizations to ordinary individuals.

*Encourage investments in projects that help push up consumers' electricity prices.

*Result in damage to environmental, ecological, scenic and property values that lawmakers and regulators have not taken into account.

003917

Since the project's effect on property values is such a hot topic, I thought Cape Wind would've done extensive research on the issue. Apparently Cape Wind is too progressive to waste time doing research-instead they quote Cindy Clark-a ReMax Masters Real Estate Broker with ten years of experience living and working in upstate, hilly Fayetteville, NY !

http://www.syracusehometeam.com/abio.aps?tk=66.203.75.63_1109114224&LB=&LA=cindyclark

There are two wind farms near Fayetteville, NY (population 4,183) the Fenner wind farm (Fennerwind.com) has only 20 wind turbines. Fenner's turbines are set among fields of crops on the rolling hills in upstate New York. The other wind farm has only 7 wind turbines in a similar setting-quite different topography and view shed than Nantucket Sound.

Cape Wind is nothing more than a taxpayer-subsidized Emissions Credit and Tax Shelter day trading vehicle for James S. Gordon and his proposed institutional investors.

The only lasting "green effect" of this project will be the greenbacks James S. Gordon and Cape Wind's investors accumulate in their bank accounts thanks to "green futures" commodity market and government subsidies.

Jane Logan,CPCU
31 Main St.
P.O. Box 942
Sandwich, MA 02563

H 508-888-3777
C 508-566-4075
W 508-775-6060

| | A | B | C | D | E | F | G | H | I | J | K |
|----|-------------------------------------|------------------------------|------------------------|-------------------------|-----------|----------|----------|----|----------|----------|----------|
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | ENTITY | PRESIDENT/MANAGER | TREASURER | SECRETARY | FEIN | OLD FEIN | ORG | ST | VOL | INVOL | REVIVED |
| 4 | Energy Management, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 42582848 | 38684 | 01/02/76 | MA | | 10/19/83 | 05/10/84 |
| 5 | EMI Cape LLC | James S. Gordon | NONE | NONE | 757287 | NONE | 06/12/01 | | | | |
| 6 | Cape Wind Associates, LLC | EMI Cape, LLC | NONE | NONE | 43576981 | 757286 | 06/12/01 | MA | | | |
| 7 | EMI Rumford, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 635253 | NONE | 04/04/97 | ME | | | |
| 8 | EMI Dartmouth Peaker, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 43289449 | 514460 | 10/10/95 | MA | 1/27/98 | | |
| 9 | EMI Dighton, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 514907 | NONE | 10/16/95 | MA | 12/28/00 | | |
| 10 | EMI Pawtucket, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 43046129 | 298802 | 02/20/89 | RI | | | |
| 11 | EMI Tiverton, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 43322993 | 634368 | 06/11/96 | RI | | | |
| 12 | Pepperell Power Corp. | James S. Gordon | James S. Gordon | Mitchell H. Jacobs | 239030 | NONE | 05/28/86 | MA | | 12/31/90 | |
| 13 | EMI Dartmouth, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 43016681 | 277341 | 07/20/98 | MA | 9/11/01 | | |
| 14 | Westfield Holdings, Inc. | James Gordon | Mitchell H. Jacobs | Robert J. Moriarty, Jr. | 515561 | NONE | 12/23/95 | MA | 10/16/97 | | |
| 15 | 125 Temont Corp. | James S. Gordon | Mitchell H. Jacobs | Robert J. Moriarty, Jr. | 510453913 | 837983 | 03/19/03 | MA | | | |
| 16 | Energy Funding Assoc., Inc. | Mitchell H. Jacobs | Mitchell H. Jacobs | Mitchell H. Jacobs | 231179 | NONE | 12/16/85 | MA | | 12/31/90 | |
| 17 | F & D Cab, Inc. | Mitchell H. Jacobs | Mitchell H. Jacobs | Mitchell H. Jacobs | 204735 | NONE | 03/13/84 | MA | | 12/31/90 | |
| 18 | Carew Street Med Ctr. P.C. | Wayne Miller M.D. | Wayne Miller M.D. | Mitchell H. Jacobs | 838681 | NONE | 03/27/03 | MA | 12/31/03 | | |
| 19 | Monadoc Realty, LLC | Mitchell H. Jacobs | | NONE | 43428295 | 623840 | 07/16/98 | MA | | | |
| 20 | Mitchell H. Jacobs, ESQ P.C. | Mitchell H. Jacobs | Mitchell H. Jacobs | Mitchell H. Jacobs | 43830681 | 208766 | 06/19/84 | | | 08/31/98 | |
| 21 | Stephen M. Cabitt Co., Inc. | Stephen M. Cabitt | Stephen M. Cabitt | Mitchell H. Jacobs | 42831571 | 208974 | 06/22/84 | MA | | 08/31/98 | |
| 22 | W.A.M. Ventures, Inc. | Wayne A. Miller | Wayne A. Miller | John R. Sherman | 43135963 | 377740 | 11/20/91 | MA | | | |
| 23 | Blue Stream Hatchery, Inc. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | John R. Sherman, ESQ | 43092483 | 337202 | 06/26/90 | | | | |
| 24 | Perinatal Diagnosis Center, Inc. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | John R. Sherman, JD | 43161291 | 400276 | 07/09/92 | MA | 12/31/95 | | |
| 25 | Perinatal Diagnosis Center, Inc. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | John R. Sherman, ESQ | 520971 | NONE | 04/22/85 | | | 3/31/98 | |
| 26 | Perinatal Diagnosis Center, Inc. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | John R. Sherman, ESQ | 42862652 | 112968 | 04/22/85 | | | 3/31/98 | |
| 27 | W.A.M. Leasing Corp. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | John R. Sherman, ESQ | 42947512 | 249671 | 01/08/97 | | | 12/21/00 | |
| 28 | Wayne A. Miller, MD, P.C. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | Wayne A. Miller M.D. | 42999536 | 266682 | 01/04/98 | | | 10/4/89 | |
| 29 | Winslow Financial Serv., Inc. | Scott W. Nelson | Henry H. Connolly, Jr. | NONE | 42968494 | 258101 | 06/29/87 | MA | | 08/31/98 | |
| 30 | Abbott Real Estate, Inc. | Henry H. Connolly, Jr. | Henry H. Connolly, Jr. | Henry H. Connolly, Jr. | 224251 | NONE | 07/01/85 | MA | | 12/31/90 | |
| 31 | D & O Investors, Inc. | James F. O'Neil III | Ralph J. Darling | Robert J. Moriarty, Jr. | 43292484 | 517580 | 11/14/95 | MA | | | |
| 32 | F6, Inc. | James C. Stoner | R. Brooke Pietsch, Jr. | NONE | 269872 | 472127 | 03/09/98 | MA | | 01/04/91 | |
| 33 | Halycon RE Co., Inc. | Paul M. Rugo | Paul M. Rugo | Paul M. Rugo | 43295187 | 518619 | 11/28/95 | MA | 10/26/04 | | |
| 34 | Marsh, Moriarty, Ontell & Golder | Michael H. Marsh | Jeffrey L. Ontell | Robert J. Moriarty, Jr. | 42806520 | 200774 | 12/02/83 | MA | | 12/31/90 | |
| 35 | O'Neil & Darling Assoc., Inc. | James F. O'Neil III | Ralph J. Darling | Robert J. Moriarty, Jr. | 265935 | 538526 | 05/28/96 | | | | |
| 36 | Trowt Dev Co., Inc. | Charles T. Connolly | Charles T. Connolly | Robert J. Moriarty, Jr. | 42988778 | 265935 | 12/21/87 | MA | | 08/31/98 | |
| 37 | Warren Housing Corp. | Chavela Aaron | Paul M. Rugo | Robert J. Moriarty, Jr. | 472127 | NONE | 07/28/94 | MA | 6/30/95 | | |
| 38 | Westbrook Crossing Foundation, Inc. | Francis P. Zarette | J. Michale Maynard | Robert J. Moriarty, Jr. | 349171 | NONE | 12/06/90 | MA | | | |
| 39 | Windover Corp. | James M. Wetzel | James M. Wetzel | Robert J. Moriarty, Jr. | 310501 | NONE | 08/08/89 | MA | | 08/31/98 | |
| 40 | Robert J. Moriarty, M.D. P.C. | Robert J. Moriarty, Jr. M.D. | Jane Moriarty | Richard Moriarty | 42549159 | NONE | 09/11/74 | | | 08/31/98 | |

| | A | B | C | D | E | F | G | H | I | J | K |
|----|----------------------------|-------------------|--------------------|-------------------------|-----------|----------|----------|----|----------|----------|----------|
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | ENTITY | PRESIDENT/MANAGER | TREASURER | SECRETARY | FEIN | OLD FEIN | ORG | ST | VOL | INVOL | REVIVED |
| 4 | Energy Management, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 42582848 | 38684 | 01/02/76 | MA | | 10/19/83 | 05/10/84 |
| 5 | EMI Cape LLC | James S. Gordon | NONE | NONE | 757287 | NONE | 06/12/01 | | | | |
| 6 | Cape Wind Associates, LLC | EMI Cape, LLC | NONE | NONE | 43576981 | 757286 | 06/12/01 | MA | | | |
| 7 | EMI Rumford, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 635253 | NONE | 04/04/97 | ME | | | |
| 8 | EMI Dartmouth Peaker, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 43289449 | 514460 | 10/10/95 | MA | 1/27/98 | | |
| 9 | EMI Dighton, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 514907 | NONE | 10/16/95 | MA | 12/28/00 | | |
| 10 | EMI Pawtucket, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 43046129 | 298802 | 02/20/89 | RI | | | |
| 11 | EMI Tiverton, Inc. | James S. Gordon | Mitchell H. Jacobs | NONE | 43322993 | 631368 | 06/11/96 | RI | | | |
| 12 | Pepperell Power Corp. | James S. Gordon | James S. Gordon | Mitchell H. Jacobs | 239030 | NONE | 05/28/86 | MA | | 12/31/90 | |
| 13 | EMI Dartmouth, Inc. | James S. Gordon | Mitchell H. Jacobs | Mitchell H. Jacobs | 43016681 | 277341 | 07/20/88 | MA | 9/11/01 | | |
| 14 | Westfield Holdings, Inc. | James Gordon | Mitchell H. Jacobs | Robert J. Moriarty, Jr. | 515561 | NONE | 12/23/95 | MA | 10/16/97 | | |
| 15 | 125 Temont Corp. | James G. Gordon | Mitchell H. Jacobs | Robert J. Moriarty, Jr. | 510453913 | 837983 | 03/19/03 | MA | | | |

003917

Economic Factors for Wind Projects

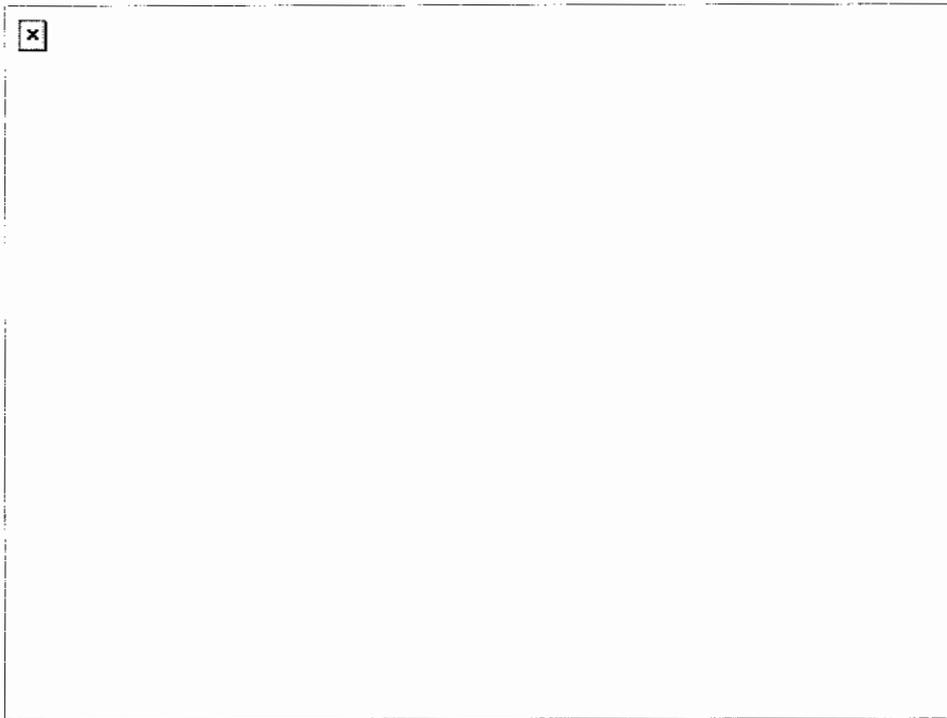
003917

With special reference to Highland New Wind Development

Last Update: 29 January 2005

This page is dedicated to economic information that applies to wind-power projects anywhere in the United States and specifically applies to the Highland New Wind Development project proposed for the northwestern corner of Highland County, VA. Let me say right up front that I am not an economist or tax accountant. I will try to compile factual information on the economics of wind power along with the opinions of recognized experts in this field. Corrections and suggestions are welcome — please let me know if I have gone astray in any way.

John R. Sweet, Mustoe, VA



This slide is taken from a presentation in March 2004 by Larry Flowers of the National Renewable Energy Lab, Wind Powering America program, listing some of the economic development issues for wind power.

http://www.mwcog.org/uploads/committee-documents/qF5fWl420040325105634.ppt#292,9,Economic_Development_Opportunitie

The cover of a brochure for a December 2003 conference in New York titled *Financing Wind Power Projects* [111 Kb] touts the tax advantages of wind projects, saying, “Federal tax benefits pay as much as 65% of the capital cost of wind power projects in the United States.” They seem proud of this but it transfers millions of dollars from the pockets of ordinary citizens into the pockets of wealthy developers every year. I will discuss all of these issues in the following paragraphs.

The Production Tax Credit

The production tax credit is a direct credit against a company's federal income tax based on the generation of electricity from renewable resources such as wind, solar, geothermal, etc. It tends to apply mainly to wind power at this time since that is the most developed form of renewable power. It is *not* a tax deduction such as an individual gets by contributing to a charity. It is a direct credit applied to the bottom line of the tax bill, essentially cash money from the taxpayers to the developer of the wind project. The PTC was enacted by Congress several years ago. It was given a specific expiration date but that date has been repeatedly extended. It now expires on 31 December 2005 but it is likely to be renewed again.

003917

The amount of the PTC is now 1.8¢/KWH of electricity delivered to the grid. It does not depend on the installed capacity of the wind plant. HNWD plans to install turbines totaling 39 MW capacity at a cost of \$60M. In order to figure the amount of their PTC benefit the *capacity factor* must be considered.

The Capacity Factor

The capacity factor is a measure of how much electricity is actually generated compared to the theoretical maximum. The wind does not blow all of the time or at the ideal speed. Turbines begin to generate at about 8 MPH, reach full power at about 30 MPH, and are shut down to protect the mechanism at about 55 MPH. The capacity factor accounts for down time as well as time spent generating at partial capacity. A study of the Top of Iowa Wind Farm by the Iowa Department of Natural Resources found a capacity factor of 27.7%. [80.1 MW of installed capacity x 730 hr/month = 58,473 MWH/month maximum output. Actual production averaged 16,193 MWH/month for 2002. The ratio of actual to maximum output is the capacity factor.] On the ridges in the middle Atlantic area it runs somewhere around 30%.

For HNWD's 39 MW plant this means an output of about 12 MW or 12,000 KW. There are $24 \times 365 = 8760$ hours in a year $\times 12,000 \text{ KW} = 105$ million KWH. Therefore the PTC of 1.8¢/KWH will yield a payment to HNWD of about \$1.9M per year or nearly \$19M over ten years, about 1/3 of the original investment.

Renewable Portfolio Standards

Various states, not [at this time] including Virginia, have enacted laws specifying *Renewable Portfolio Standards*, which is a fancy way of saying that utilities in those states must supply a certain percentage of their power from renewable sources — wind, solar, etc. — basically the same sources that qualify for the PTC. This creates a demand for renewable power, as it is supposed to, but primarily a demand for wind power since that is generally the least expensive renewable source, at least in this area, and especially if not all costs are internalized (we will get into that later).

The generation cost of conventional electricity in this area is about 3.5 to 4¢/KWH. Wind-generated electricity costs the producer some 6 to 6.8¢/KWH. Subtracting the PTC, one has a net cost of 4.2 to 5¢/KWH. Utilities are willing to pay this extra cost for wind energy in order to comply with RPS laws. If the utility serving the immediate area where the wind plant is located does not have RPS compliance issues, more distant utilities can satisfy their RPS requirements by buying *Renewable Energy Certificates*.

Renewable Energy Certificates

The REC provides a way for utilities with no direct access to “green” energy to satisfy their RPS requirements. RECs can be traded among utilities so that a utility in New York, for example, might buy RECs from HNWD, thus meeting its RPS quota and being able to claim that it is using a renewable source of energy. Electrons all look alike, of course, and once on the grid a “renewable” electron cannot be distinguished from a “conventional” electron.

003917

Since RECs sell for 1.5 to 2¢/KWH, HNWD can now sell its power to the local utility at or below the prevailing conventional cost and still make money. We saw, above, that the PTC generates some \$19M over ten years and now the sale of RECs will produce a similar amount of income, while the sale of the electricity itself will produce about double that amount.

So we now have a \$60M project that will bring in \$19M from taxpayers all over the country, another \$19M from the electricity customers of the utility that bought the RECs, and some \$38M from the sale of the electricity to the same or another utility. The company now has sales and credits of \$76M on a \$60M investment, less costs for maintenance, administration, taxes, etc., and the lifespan of the equipment should allow production to continue for another 10 to 15 years.



What’s not to like? Nothing, as long as you don’t mind paying higher income taxes to support the PTC and higher electric bills to support the sale of the RECs. For the developer it really is pretty cushy — generous tax handouts and government policies that more or less require utilities to buy the product. But wait, there’s more.

Accelerated Depreciation

Normally an electrical generating plant is depreciated for tax purposes on a straight-line method over 20 years. That means that for a plant worth \$1M the owner can deduct from his net income \$50,000 every year for 20 years to figure his taxable income. In the case of its \$60M investment, HNWD would deduct \$3M each year. However, wind turbines receive yet another government preference. The owner may take *accelerated depreciation* on what is known as a 5-year double-declining balance schedule. This means that he can deduct more than half of his investment in the first two years and all of it within six years. The same total deduction is allowed in either case but under DDB one gets one’s tax benefit much sooner so one can invest the money in something else — perhaps more wind turbines.

So the owner is getting rich at the expense of the taxpayers and ratepayers. Doesn’t *anyone* else benefit? If the developer rents the land for the project then the landowner collects around \$2500/year/turbine in rent. {The slide at the top of this page indicates

\$2500-4000/year/MW but rates in this area do not seem to go that high.) In the case of HNWD, Mr. McBride owns the land so he keeps that money in his pocket. But what about the local municipality? Doesn't it reap a windfall in property taxes?

003917

Local Property Taxes

Local taxation is an iffy proposition. Some states have declared wind plants exempt from local taxation so for them the answer is zero. Virginia has not ruled on this so far so we are in unknown territory. If the State Corporation Commission treats a wind plant in the same way as a conventional power plant then Highland County should receive \$248K/year in property taxes. Bear in mind that wind plants are given special treatment in almost every other way so the SCC could easily take away some or all of this. It is also unclear what depreciation schedule would apply but what starts out at \$248K will surely drop as the value of the plant declines over time. A bill now moving through the VA legislature, [Senate Bill #1011](#), would limit local taxation of wind projects to \$3000/year/MW of installed capacity. If enacted, this would yield \$117K per year to Highland County. It seems that this provision might override depreciation so that this amount would be paid to the county each year for the life of the project — but this has not been confirmed. The NREL slide at the top of this page not only highballs potential tax revenue but fails even to mention the downside risk that a project could be ruled exempt.

Then there are tradeoffs to consider. If the presence of the wind plant causes a decline in the value of surrounding properties, which is likely, then there will be a reduction in tax revenue from those properties. Furthermore, if some people decide not to buy land or build new homes on land they already own, that will mean lost tax revenue also. The present Highland County tax rate is 0.67% or about \$2000 on a \$300,000 home. And that is tax revenue that would be here for the long haul and which would go up as property values appreciate. Meanwhile, revenue from the wind plant is going down as the plant depreciates. It would take some research to figure these tradeoffs but I will speculate that the revenue loss from 20 to 30 new homes that are not built would totally wipe out the gain in revenue from the wind plant within 20 years.

Local Jobs and Services

Items 3, 4, and 5 on the NREL slide are more difficult to analyze and are very much site specific. It states that the concrete and towers are “usually done locally.” There are no concrete plants in Highland County and the two small plants in nearby WV would be severely taxed to put out the volume required, if they could do it at all. There is no equipment in Highland or the surrounding area capable of erecting the towers and there is no available labor force to fill 40 to 80 construction jobs if they were offered. In short, outside contractors will erect the turbines using equipment, materials, and labor largely brought in from elsewhere. There would be a few short-term jobs filled by Highlanders and local convenience stores and restaurants would see a brief surge in business.

As far as permanent jobs go, the facility would need to hire several operation and maintenance people. At least one would likely need specialized training. Highlanders might be hired for these jobs but they could just as easily go to nearby West Virginians. Outsiders could also fill the jobs and they could take up residence in Highland or elsewhere. We are only talking about 2 or 3 jobs in any case, which would have little effect upon the total job picture in the county.

Transmission and Generation Costs

Most wind projects would require the construction or upgrading of transmission lines. The HNWD project is ideally located in this respect, as a 69 KV transmission line with sufficient available capacity to carry the output crosses the HNWD property. If the project were to expand in scope this line would have to be upgraded to 138 KV at a cost of around \$500K/mile plus a new 138 KV substation at \$1M+.

003917

Wind power is *non-dispatchable*, which means that power managers cannot have it turned on as demand rises and ramped back as demand declines. Wind power is there only when the wind blows. This means that higher-cost transmission lines must be built to carry the peak load and much of that capacity will be unused most of the time. Similarly, the variable and unpredictable power output means that conventional power plants must be kept up and running to be ready to pick up the slack when the wind diminishes. Thus there is very little reduction in coal consumption or CO₂ emissions when the wind is blowing because the conventional plant cannot be shut down. There is even some evidence indicating that a coal-fired plant emits more pollutants operating below capacity than it does when running at full capacity. If that is true it leads one to the ironic conclusion that wind turbines might even increase CO₂ emissions. More research is needed to confirm or refute this effect.

References

- [Case Study of the Top of Iowa Wind Farm](#) by the Iowa Department of Natural Resources. [70 Kb]
- [State and Local Economic Impact of "Wind Farms" using Highland County as an example](#), by Glenn R. Schleede, 28 April 2004. [213 Kb]
- [Facing up to the true costs and benefits of wind energy](#), by Glenn R. Schleede, 24 June 2004, 22-page report presented to the American Electric Cooperative annual meeting. [240 Kb]
- [Economic report by Michael Siegel](#), 20 May 2004, prepared specifically for Highland County, was presented at an information meeting in Monterey. [77 Kb]
- NOTE — At the time the above reports were prepared the HNWD proposal was for 50 MW and Highland's tax rate was 0.62%. Little else has changed.
- [Financing Wind Projects Through the Voluntary Green Power Market](#), by Kathy Belyeu, American Wind Energy Association, October 2004. This article discusses the PTC and REC and other schemes to induce taxpayers and ratepayers to support otherwise unprofitable wind energy projects.

John R. Sweet, Mustoe, VA

Return to the [top of this page](#) or go back to the [main wind page](#).

Emission trading occurs when a source of air pollution reduces its emissions and then transfers ownership of the emission reduction to another party. Markets for emission reductions can be created by regulation (the market for sulfur dioxide allowances for example) or voluntarily (the current market for greenhouse gases).

Emissions trading involves the transfer in ownership of emission reductions.

003917

Emission allowances are typically given by regulators to large sources of pollution, and allow those sources to release a prescribed amount of a pollutant. Surplus allowances can be sold, traded, or banked for future use.

Credits for emission reductions provide an incentive to find the most cost-effective way to reduce emissions, since once an emission reduction credit is created, it can be sold on the open market.

What is Green Energy?

Green Energy is delivering goods and services that use energy, to consumers in ways that cause less environmental impacts and less pollution.

Examples of the services consumers use that use energy include: heating, cooling, lighting, and having our electronic equipment deliver the television shows, music, and computer functions we want.

The environmental impacts and pollution, caused by the process of delivering these services that use energy to consumers, can be reduced in a variety of ways. Examples include:

1. Increased energy efficiency
2. Renewable energy like wind generated electricity, solar water heating, solar photovoltaic generated electricity, and hydro electric generation
3. Cleaner fuels

The more that these environmental impacts and pollution can be reduced, the greener the energy.

What are emission reduction credits or offsets?

Environmental emission reduction credits or offsets are reductions in environmental emissions that result from some action like increased energy efficiency, and are measured and recorded in an appropriate way so that they can be bought, sold, and traded.

This gives people the option of reducing emissions from their energy use directly, or they can buy emission reductions from someone else in the form of emission reduction credits. The same overall emission reductions are achieved either way.

This is like most goods and services we use. We can make or do things ourselves, or we can pay someone else to do them. We can grow our own food, or we can pay someone to grow it for us. Either way, we have food to eat. We can build our own house, or we can work at the job we are good at, and pay a carpenter to build our house.

The good thing about emission reduction credits (offsets) is that they let those who can reduce emissions at the lowest cost do the reductions, so that the overall cost of emission reductions is reduced.

How does Cleaner and Greenersm report emission reductions?

Emission reductions are reported to the U.S. Department of Energy (DOE) using the Cleaner and Greenersm Reporting Standards. These standards are based on the **Voluntary Reporting of Greenhouse Gases Program** (developed by the Energy Information Administration (EIA) pursuant to Section 1605(b) of the Energy Policy Act). Working with a team of stakeholders, Leonardo Academy developed extensions to the Voluntary Reporting Program that provide coverage for the full range of pollutants, and support emission reduction trading markets. The Cleaner and Greenersm Reporting Standards require that emission reductions be reported under 1605(b), and that the additional information required by the extensions be filed in these reports. Transfers of ownership of emission reductions will also be reported under 1605(b).

What does *retiring* emission reduction credits mean?

003917

Emission reduction credits, where sanctioned by environmental regulators, have the potential to permit the owner of the credits to exchange them for emitting the amount of pollution allowed by the credits (typically one credit equals one ton of a given pollutant). Retiring emission reduction credits means having the credits held by a nonprofit or government organization with the guarantee that the credits will never be sold, transferred, or otherwise used for the purpose of allowing emissions.

How much are the emission reductions from energy efficiency projects worth?

The value of emission reductions is uncertain in the absence of a fully developed market. As the voluntary market for emission reductions develops, a market price will become clear. Based on the few voluntary trades that have occurred and recent trades in credits for regulated emissions, it is estimated that the value/cost of emission reductions for energy efficiency projects range from 0.3 to 1.0 cents per kWh for electricity savings, and 9.6 to 37.7 cents per MMBtu for natural gas savings.

Introduction to Emissions Trading

Sources of air pollution that wish to reduce their emissions have many options available to them. These options include installing more advanced pollution control technology, switching to cleaner fuels, improving energy efficiency, and increasing renewable energy use. Sources that decrease their emissions by implementing such measures create **emission reductions**. Emission reductions from energy efficiency and renewable energy produce health and environmental benefits by reducing sulfur dioxide, carbon dioxide, nitrogen oxides, lead, mercury, and particulate matter emissions.

Emission reductions are decreases in pollutant emissions that result from actions like installing more advanced pollution control technology, switching to cleaner fuels, improving energy efficiency, and increasing renewable energy use.

Emission trading occurs when a source of air pollution reduces its emissions and then transfers ownership of the emission reduction to another party. Markets for emission reductions can be created by regulation (the market for sulfur dioxide allowances for example) or voluntarily (the current market for greenhouse gases).

For more information on the U.S. market for sulfur dioxide (SO₂) and allowance trading, click [here](#).

Emissions trading involves the transfer in ownership of emission reductions.

Emission allowances are typically given by regulators to large sources of pollution, and allow those sources to release a prescribed amount of a pollutant. Surplus allowances can be sold, traded, or banked for future use.

Sources of air pollution that reduce their emissions may receive credit for their reductions. **Emission reduction credits (ERCs)** reward those who take action to reduce their pollutant emissions and therefore encourage pollution reduction actions. **Credits for emission reductions provide an incentive to find the most cost-effective way to reduce emissions, since once an emission reduction credit is created, it can be sold on the open market.**

Emission reduction credits (ERCs) are given to recognize actions taken to reduce pollution. The amount of the credit corresponds to the amount and type of emission reduction. Credits can typically be sold, traded, or banked for future use.

A company can also *offset* its own emissions by causing a reduction or sequestration of emissions outside its operations. Offsets were originally designed to allow growth and development in areas that were not in compliance with an air quality standard without increasing pollution levels. An offset program allows emission trading between a new or modified source of air pollution and an existing source. Under this program, the new source is required to *more than* offset its emissions with reductions by the existing source. In this way, net emissions actually decrease.

Emission Offsets A company can offset its own emissions by causing a reduction or sequestration of emissions outside its operations. Similarly, consumers and businesses can "offset" the pollution caused by their energy use by buying and retiring the emission reduction credits created by someone else. 003917

Emission trading can be used to reduce pollution. Instead of reselling ERCs or allowances to sources of air pollution that will use them to compensate for their pollutant emissions, allowances can be retired, without emitting any pollution. Once an allowance or ERC is retired, it can no longer be bought, sold, or used to offset pollution. Purchasing and retiring ERCs or allowances reduces the amount of pollution that is discharged to the atmosphere.

Consumers and businesses can take advantage of this concept and offset the emissions caused by their energy use by participating in emissions trading, i.e., buying and retiring ERCs. This amounts to paying someone else to reduce their emissions, with the agreement that the buyer will own the resulting emission reduction credits. In this way, we have a low cost way to compensate for the pollution that results from our energy use. Purchasing ERCs also strengthens the emission reduction market and gives companies and individuals an added incentive to reduce their pollution.

*Individuals and businesses can reduce pollution by buying **and retiring** emission reduction credits/emission allowances/offsets **without** emitting any pollution.*

Offset your emissions through Cleaner and Greenersm

To demonstrate the impact that we all can have on reducing pollution, Leonardo Academy has instituted the Cleaner and Greenersm Green Energy program that lets consumers, businesses, and organizations offset their emissions by making a donation (all U.S. donations are tax-deductible) to buy and retire emission reduction credits. In this way, consumers everywhere can buy Green Energy through the Cleaner and Greenersm web site.

For pollutants that have established national emission trading systems in place, the Cleaner and Greenersm Program buys emission allowances and offsets from within that trading system. For example, sulfur dioxide allowance auctions are conducted by the Chicago Board of Trade. For pollutants like carbon dioxide, that do not have established emission trading systems, the Cleaner and Greenersm Program buys emission reduction credits that are reported according to the Multiple Pollutant Emission Reduction Reporting System developed by Leonardo Academy with funding from the U.S. EPA. Any emission reduction credits or offsets that are purchased are retired. Once retired, they cannot be sold, traded, given away, or otherwise used to offset pollution.

The Cleaner and Greenersm Green Energy Program shows that there are low cost pollution reduction options available, encourages increased energy efficiency and renewable energy, and shows that there is public support for taking action to reduce pollution.

Cleaner and Greenersm Environment is a **program of Leonardo Academy, a 501(c)(3) environmental nonprofit organization**. Leonardo Academy uses an interdisciplinary approach—a thorough understanding of policy, economics, and scientific and technical issues—to improve the environment through education, analysis, consumer programs, and the development of innovative approaches to public policy implementation.

Leonardo Academy works to harness both competitive market and public policy mechanisms as engines for environmental improvement and increased energy efficiency and renewable energy. Leonardo Academy reports reductions in emissions, and promotes the development of markets for the emission reductions that result from energy efficiency, renewable energy, and other emission reduction actions.

Leonardo Academy's Cleaner and Greenersm Environment Program is designed to help move market-based energy efficiency and renewable energy into its appropriate role—at the center of environmental improvement and emission reduction strategies.

The Cleaner and Greenersm Environment Program has four main objectives:

003917

1. To provide recognition for businesses and organizations that reduce emissions by implementing energy efficiency and renewable energy projects.

To accomplish this, we have implemented the Cleaner and Greenersm Certification Program. The Certified Cleaner and Greenersm Seal allows businesses, organizations, schools, hospitals, and other facilities to communicate their environmental achievements to the public, and provides consumers with a way to identify these environmentally-responsible companies.

Click [here](#) for a list of Certified companies and more information about the Certification Program.

2. To demonstrate that people want the low cost emission reductions provided by energy efficiency and renewable energy.

The Cleaner and Greenersm Environment Program makes it easy to reward energy efficiency and renewable energy and buy and retire emission reduction credits to offset the emissions caused by energy use.

Click [here](#) to find out how you can offset *your* energy use by buying and retiring emission reduction credits.

3. To open up environmental regulations to include emission reductions from energy efficiency and renewable energy.

The Cleaner and Greenersm Environment Program is working to have energy efficiency and renewable energy recognized by environmental regulations as a way to achieve emission reductions. (Most environmental regulation excludes these important sources of emissions reduction.) Environmental regulations should be structured so all energy efficiency and renewable energy projects can receive the economic value of their emission reductions in the marketplace.

To this end, Leonardo Academy has proposed the Cleaner and Greener Principles for Pollution Reduction Programs. Click [here](#) for more information about the Cleaner and Greener Principles.

4. To demonstrate that low cost emission reductions are available from energy efficiency and renewable energy.

For more information about the low cost of emission reductions from energy efficiency and renewable energy, refer to our [reports](#) section.

Invitation to Participate

Individuals, organizations, and businesses are invited to become involved in Leonardo Academy's Cleaner and Greenersm Environment Program and help us move market-based energy efficiency and renewable energy into the center of the environmental improvement actions where they belong.

Michael Arny, Director, Leonardo Academy
Madison, Wisconsin

DEFINITIONS

Emission allowances are typically given by regulators to large sources of pollution, and allow those sources to release a prescribed amount of a pollutant. **Surplus allowances can be sold, traded, or banked for future use.**

Emission reductions are decreases in pollutant emissions that result from actions like installing more advanced pollution control technology, switching to cleaner fuels, improving energy efficiency, and increasing renewable energy use.

Emission reduction credits are given to recognize actions taken to reduce pollution. The amount of the credit corresponds to the amount and type of emission reduction. **Credits can typically be sold, traded, or banked for future use.**

Emission trading involves the transfer of ownership of emission reduction credits or emission allowances.

Offsets A company can *offset* its own emissions by causing a reduction or sequestration of emissions outside its operations. 003917

Three Types of Emissions Trading

For a detailed explanation of the different types of emissions trading systems, see the Airbank's web site at There are three main types of emissions trading systems: open market, multi-source cap-and-trade markets, and offset trading.

Open Market Emissions Trading

Open market emissions trading provides incentives for voluntary reductions of air contaminant emissions in return for the ability to sell the reductions achieved to others. These markets also provide alternative means for **regulated** businesses and industries to achieve compliance with their air pollution control obligations, when conventional control methods were not available or not cost effective. Open markets can include regulated businesses that are not large enough to be included in a typical cap-and-trade markets.

Credits are created under an open market system when sources or facilities voluntarily reduce their emissions over a finite period of time. These credits are generally called Discrete Emission Reductions (DERs); however, in some states, the term Emission Reduction Credits (ERCs) is used. The open market emissions trading system involves the transfer of verified DERs to be sold at a specified environmental discount. The portion of DER credits that must be retired for the benefit of the environment in each transaction is usually 10 percent but can range up to 20 percent for new "permit insurance" uses. The reductions can be traded to other facilities that need to comply with certain regulatory limits. Environmental groups and private individuals may also voluntarily retire emission credits in order to ensure that the emission reductions represented by the credits remain permanently removed from the air. This retirement is in addition to the required 10 percent environmental discount.

New Jersey is currently the only state in the eastern U.S. to have an open market emission trading program, although several other states are considering developing such a program. Michigan and Texas have adopted programs similar to New Jersey's emission trading program.

Credits created under an open market system must meet strict creation and use criteria, set by the state, to ensure the process yields continuous environmental improvement and the credits are, therefore, a valuable commodity. The most common types of DERs being traded today are nitrogen oxides (NOx) and volatile organic compounds (VOCs). Both of these pollutants contribute the formation of ground level ozone. New Jersey has recently added new provisions for the generation and banking of greenhouse gas (GHG) credits in its open market, although no uses for GHG credits are proposed in the new rules.

Multi Source Cap-and-Trade Emissions Trading Markets (Allowance Trading)

Under a multi source cap-and-trade market or allowance trading system, an annual area-wide emissions limit or cap is established for a defined region of air pollution sources, with a reduction schedule set over time. Shares of this cap are usually distributed to sources of emissions in the form of allowances. Allowances can be allocated several different ways but have traditionally been given to each participating source for its own exclusive use according to its historical annual emissions. Under this system, sources which emitted the most pollution in the past (pre-budget enactment) are rewarded with the most allowances.

Each participating source must possess enough allowances at the end of the annual compliance period equal to their emissions during that period. A source can accomplish this through a number of avenues, including various emission control approaches, DSM programs, use of its assigned allowances, or the purchase of allowances in the trading market. Unused allowances can be banked for future use, traded, retired, or sold.

The U.S. EPA's Acid Rain Program—established to reduce emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x)—is the most well-known example of an allowance trading program. Anyone can purchase SO₂ allowances through a broker, environmental groups, or the annual auction conducted every March by the Chicago Board of Trade. Since 1994, the price has fluctuated from a low of \$69 per ton in March of 1996 up to a high of \$212 per ton in May of 1999. Currently (Fall 1999), SO₂ allowances are selling for \$180 to \$200 per ton.

The NOx budget programs established by the Ozone Transport Commission (OTC) in the northeastern United States (www.epa.gov/acidrain/otc/ovrww.html) and the Ozone Transport Assessment Group (www.epa.gov/ttn/otag) serve as other examples of allowance trading.

For more information on EPA's Acid Rain SO2 Trading Program, see the Agency's website at <http://www.epa.gov/docs/acidrain/allsys.html>

003917

Offset Trading

Offset programs were developed in the late 1970s under EPA's New Source Review (NSR) program for permitting the existence of certain new, or significantly modified, air pollution sources in non-attainment areas without further adversely affecting the region's air quality.

Under offset programs, new or modified sources, such as major new construction projects, must not only install the most stringent level of control technology available, but also must provide *additional* emission reductions (offsets) generated by neighboring sources to alleviate the projected residual emissions beyond that control level.

An emission offset is a permanent reduction in a source's emission rate, created by an action taken above and beyond that required of the source. Offsets can be created by installing advanced technology controls beyond regulatory requirements or from the permanent shutdown of an air pollution source (the latter being the most common). Offset trading also incorporates the transfer of current emission rates between sources that extend indefinitely into the future.

Many companies and political jurisdictions currently hold offsets. These offsets are available for sale, or in certain instances, are offered to applicable sources free of charge. In New Jersey, offsets can be used only to meet NSR requirements. However, in Massachusetts, Michigan, and Texas, such offsets can be converted in certain instances to discrete emission credits for compliance use under an open market trading system.

Emission Trading Registries

Emission reduction trading requires an emission trading registry. Similar to financial exchanges for stocks and bonds, an emission trading registry would facilitate a market for emission reduction credits. There are currently several registries or trading houses in the U.S., including the Clean Air Action Corporation Registry that supports Canada's Pilot Emission Reduction Trading (PERT) project, the State of Michigan, the NESCAUM Demonstration Project, and Airbank. The government of Canada also established a non profit registry, the Voluntary Challenge Registry, to facilitate reductions as part of Canada's 1992 Framework Convention on Climate Change greenhouse gas commitments, although it does not provide full support as an emission trading exchange. Registries typically assume no responsibility for the validity or legitimacy of the emission credit that is posted for sale. Their primary function is the clearing and trading of the market and is presumed that the "buyer beware".

The Clean Air Emission Reduction Registry was developed by a private company, Clean Air Action Corporation (CAAC), as part of NESCAUM (Northeast States for Coordinated Air Use Management) and MARAMA (Mid-Atlantic Regional Air Management Association) Emission Reduction Trading Demonstration Projects sponsored largely by the U.S. EPA. The Registry has been used by states, such as Michigan, for state level trading programs. It currently tracks ERCs created under a number of state level trading programs including Connecticut, Massachusetts, New Jersey, and Texas where CAAC is involved in the trading process. The Registry has information on credit availability and pricing when registry clients permit the release of price information. Mosakin International Corp., a private entity, serves as the operator of New Jersey's open market trading registry. The OMET registry is publicly available on the world wide web at www.omet.com

Examples of Current Emission Trading Programs

Since 1994, Canada's Pilot Emission Reduction Trading (PERT) Program has contributed to the reduction of nearly fourteen thousand metric tons of ground-level ozone precursors (nitrogen oxides (NOx) and volatile organic compounds (VOC)). The market for emission credits in North America is still undeveloped; however, NOx emission credits in the northeast United States have averaged around US\$1,000 per ton, and VOC credits around US\$2,500 per ton. Markets for carbon dioxide (CO2) and carbon monoxide (CO) are not as well established, although there has been some experimental trading of CO2 recently, usually in the \$1 to \$5 per ton range. In comparison, emission trading for sulfur dioxide (SO2) under the U.S. Clean Air Act is a much more advanced. Lower costs for gas scrubbing technology and an overallocation of SO2 allowances have resulted in overachievement of SO2 reductions goals, and led to prices for SO2 of less than \$200 per short ton.

Many countries are planning domestic greenhouse gas (GHG) emissions trading initiatives to ensure that they reach the binding targets which have been made in Kyoto (see <http://www.unctad.org/en/subsites/etrade/initiatives.htm> for more detailed information). Businesses need to plan and implement mitigation strategies and time is needed for regulations to be written in time for the first commitment period. Early crediting, tax cuts, and increased government spending in research and development is also being pursued to encourage energy-efficient technologies and GHG reductions.

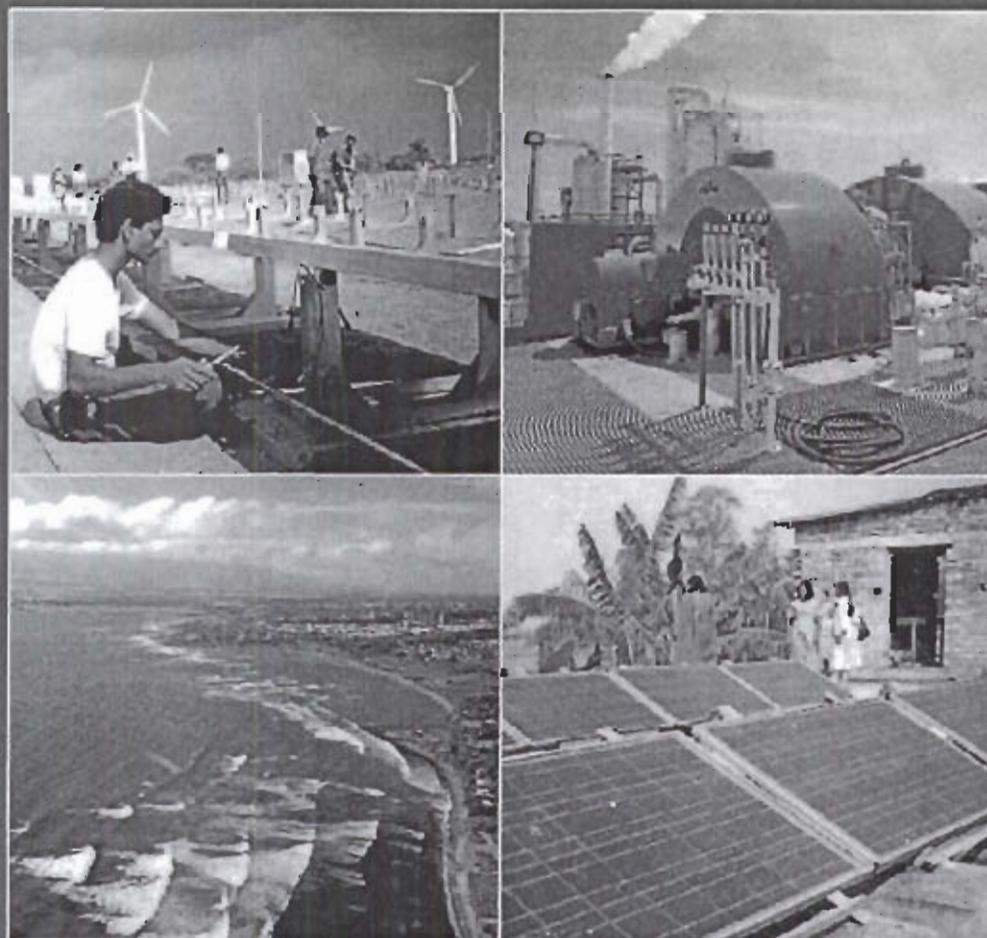
As for domestic GHG emissions trading initiatives, there are many issues to be addressed by each country, such as early crediting, upstream or downstream emission reduction recognition systems, which allowance distribution system should be used, and many other issues. Denmark is the only country with GHG trading actually in place.

003917

003917

Financial Risk Management Instruments for Renewable Energy Projects

Summary document



Acknowledgements

This study was commissioned by UNEP's Division of Technology, Industry and Economics (DTIE) under its Sustainable Energy Finance Initiative (SEFI) and conducted by a consortium led by Marsh Ltd, members of which include Gareth Hughes and Warren Diogo, in association with Edmund Olivier, Andrew Dlugolecki of Andlug Consulting, Christian Schoenwiesner-Bozkurt of Roedel & Partner, and advisors from Climate Change Capital, Det Norske Veritas and the Global Sustainable Development Project.

The study also benefited from comments and suggestions from external reviewers, including Veronique Bishop of Carbon Finance Business, Kyoichi Shimazaki of Project Finance and Guarantees, Helmut Schreiber of Infrastructure and Energy Services Department at the World Bank, Cynthia Page at the United Nations Development Programme, members of the Climate Change Working Group of the UNEP Finance Initiative, and industry stakeholders.

The study was coordinated by Aki Maruyama of the UNEP Energy Programme. Other UNEP staff involved were Eric Usher and Mark Radka.

© Copyright 2004 UNEP

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. UNEP would appreciate receiving a copy of any publication that uses this publication as a source.

No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from UNEP.

First edition 2004

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, nor does citing of individual companies, trade names or commercial processes constitute endorsement.

UNITED NATIONS PUBLICATION

ISBN: 92-807-2445-2

Designed and produced by Words and Publications, Oxford, UK

Cover photographs courtesy of: Applied Power Corporation (top left), West Bengal Renewable Energy Development Agency (bottom right); Warren Gretz (top right and bottom left).

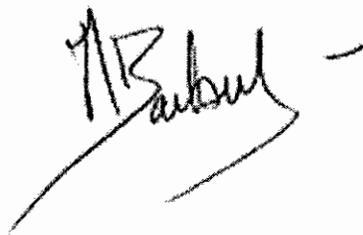
Foreword

Financial risk management is a key element of any commercial investment in conventional energy and infrastructure projects, yet little attention has been paid to its use in the deployment of renewable energy technologies, particularly in developing countries. Risk management instruments such as contracts, insurance and reinsurance, alternative risk transfer instruments, and credit enhancement products could, if used, transfer certain types of risks away from investors and lenders, reducing the costs of financing renewable energy projects. These and other financial tools are an essential part of well-established markets. But the market for renewable energy technologies is only getting started in many parts of the world and lack of good information hinders its development. Bringing better information to policy makers is one of UNEP's roles.

This report presents an overview of risks specific to the financing of renewable energy projects. It discusses both risk management products currently available in the market, and emerging instruments that could be applied to the sector. New products based on partnerships between private and public sector risk managers are also presented.

The application of risk management instruments to renewable energy projects requires financial innovation and a willingness to test new approaches. This in itself is risky, and the report suggests a learning-by-doing approach in order to gain experience and confidence in these new markets.

By providing concise technical information to risk management specialists and project developers, this report aims to contribute to a better understanding of risk management options for renewable energy projects. It is our hope that better understanding leads to greater deployment of clean energy technologies that meet development needs.



Monique Barbut
Director
Division of Technology, Industry and Economics
UNEP

Contents

| | |
|---|-----------|
| Acronyms and abbreviations | 4 |
| Glossary of terms | 6 |
| Executive summary | 10 |
| 1. Renewable Energy Technology assessment | 12 |
| 2. The role of financial risk management instruments | 13 |
| 3. Overview of risks and barriers | 16 |
| 4. Existing insurance products for renewable energy projects | 21 |
| The role of insurance | 21 |
| Insurance capital allocation | 22 |
| Existing availability of insurance for RE projects | 22 |
| <i>Wind energy projects</i> | 22 |
| <i>Geothermal energy</i> | 25 |
| <i>Biomass/biogas</i> | 26 |
| <i>Wave/tidal/ocean current</i> | 27 |
| <i>Solar PV</i> | 27 |
| <i>Small hydro</i> | 28 |
| 5. Evolving financial risk management instruments that can support renewable energy projects | 29 |
| The role of emerging risk management instruments | 29 |
| <i>Weather derivatives for RE projects</i> | 29 |
| <i>Adaptable credit products</i> | 31 |
| <i>Risk finance vs. risk transfer</i> | 32 |
| <i>Evolving/adaptable risk management and 'new capacity' structures</i> | 32 |
| <i>Public sector instruments</i> | 34 |

| | |
|--|-----------|
| 6. Scope for developing new financial risk management instruments for the renewable energy sector | 37 |
| Scope for new product development | 37 |
| <i>Least Developed Countries</i> | 37 |
| <i>Carbon Finance</i> | 37 |
| Demand issues | 39 |
| <i>New approaches in Europe</i> | 39 |
| <i>Expertise and markets</i> | 39 |
| A learning-by-doing approach to new product development | 40 |
| Special purpose underwriting vehicles | 41 |
| Other programmes | 42 |
| Barrier removal priorities | 43 |
| Concluding summary | 44 |
| <hr/> | |
| 7. Bibliography | 45 |
| <hr/> | |
| About the UNEP Division of Technology, Industry and Economics | 47 |
| <hr/> | |

003917

Acronyms and abbreviations

| | |
|--------|---|
| AfDB | African Development Bank |
| ASEAN | Association of South East Asian Nations |
| AsDB | Asian Development Bank |
| CDM | Clean Development Mechanism |
| CERES | Coalition for Environmentally Responsible Economies |
| CLN | Credit Linked Note |
| CSR | Corporate Social Responsibility |
| CUP | Cooperative Underwriting Programme (of MIGA) |
| DFID | Department for International Development (a UK Ministry) |
| EBITDA | Earnings before interest, tax, depreciation and amortization |
| EBRD | European Bank for Reconstruction & Development |
| ECA | Export Credit Agency |
| ECGD | The Export Credits Guarantee Department (of the UK) |
| EIA | Environmental Impact Assessment |
| EIB | European Investment Bank |
| EU | European Union |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| GEF | Global Environmental Facility |
| GNI | Gross National Income |
| GNP | Gross National Product |
| IADB | Inter-American Development Bank |
| IBRD | International Bank for Reconstruction & Development |
| IDA | International Development Agency |
| IFC | International Finance Corporation |
| IFI | International Financial Institution (i.e. IMF and World Bank) |
| ILS | Insurance Linked Security |
| IMF | International Monetary Fund |
| IRR | Internal Rate of Return |
| kWh | Kilowatt Hour |
| LDC | Least Developed Country |
| M&A | Mergers & Acquisitions |
| MDB | Multilateral Development Bank |
| MFI | Multilateral Financial Institution |
| MIGA | Multilateral Investment Guarantee Agency |
| MW | Mega-Watt |

| | |
|--------|--|
| NCR | Non-Commercial Risk |
| NCRI | Non-Commercial Risk Insurance |
| NEXI | Nippon Export and Investment Insurance (of Japan) |
| NFFO | Non-Fossil Fuel Obligation |
| NGOs | Non-Governmental Organizations |
| NPV | Net Present Value |
| OBI | Official Bilateral Insurer (for political and non-commercial risk) |
| OCF | Official Capital Flows (Non-Concessional Funds plus ODA) |
| ODA | Official Development Assistance |
| OECD | Organisation for Economic Cooperation and Development |
| O&M | Operations and Maintenance (contracts or agreements) |
| OPIC | Overseas Private Investment Corporation (of the USA) |
| OTC | 'Over-the-Counter' (securities) |
| PCG | Partial Credit Guarantee |
| PPA | Power Purchase Agreement |
| PPI | Public Private Interaction |
| PPP | Public Private Partnership |
| PRG | Partial Risk Guarantee |
| PR | Political Risk |
| PRI | Political Risk Insurance |
| PSA | Production-Sharing Agreement |
| PV | Photovoltaic |
| RDB | Regional Development Bank |
| RE | Renewable Energy |
| RET | Renewable Energy Technology |
| RoA | Return on Assets |
| RoE | Return on Equity |
| SME | Small and Medium-sized Enterprise |
| SEFI | Sustainable Energy Finance Initiative |
| SPUV | Special Purpose Underwriting Vehicle |
| STAP | Scientific and Technical Advisory Panel (GEF) |
| UK | United Kingdom (Great Britain and Northern Ireland) |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNCTAD | United Nations Conference on Trade & Development |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| USD | United States Dollars |
| WB | World Bank |
| WBG | World Bank Group (i.e. IBRD, IDA, IFC and MIGA) |
| WHO | World Health Organization |
| WTO | World Trade Organization |
| XOL | Excess of Loss (Reinsurance contract) |

Glossary of terms

003917

Accession Countries: Countries in the process for accession to the European Union.

Appetite for Risk: A measure of the propensity for Risk Taking or Risk Aversion.

ART (Alternative Risk Transfer): Generic phrase used to denote various non-traditional forms of re/insurance and techniques where risk is transferred to the capital markets. More broadly, it refers to the convergence of re/insurance, banking and capital markets.

Asset-backed Securities: Debt securities which depend on a pool of underlying receivables. In ART these refer to insurance-linked securities.

Blended Cover: Typically a combination of traditional re/insurance product lines with other risk management products in a single aggregated policy. These are commonly arranged on a multi-year basis.

Bond: Capital instrument issued by government or private corporation. Redemption may be linked to an event (e.g. CAT bond).

Call Option: Gives buyer the right to buy, seller is obliged to sell.

Capacity: Amount of reinsurance that can be underwritten by an entity or market.

Captive: The term for an insurance company that is owned by the company it insures. It is a Risk Financing strategy to lower the cost of insuring Risk and is usually established in a 'low-tax' environment.

CAT: Common term for a catastrophe.

CAT Bonds: Securitized insurance receivables—an example of an ART structure.

Cedant: An insurance company buying reinsurance cover.

Collateralized Debt Obligations (CDOs): Securitization of loans/bonds etc.

Commercial Risk: Risk from a company's commercial activities as distinct from insurable risk.

Contingent Credit: Credit made available related to specific events and limits.

Credit Derivatives: Securities that offer protection against credit/default risk of bonds or loans.

Deductible: First part of loss borne by policyholder.

Degree Day: Term created to better forecast demand for energy. Number of degree days is calculated from the difference between actual temperature and a previously set level (usually 65 degrees). Expressed in Cooling Degree Days or Heating Degree Days.

003917

Derivative: A financial contract whose value is derived from another (underlying) asset, such as an equity, bond or commodity.

Excess of Loss Reinsurance: Reinsurance which pays on the basis of the excess of claims over and above a predetermined retention limit.

Experience Account: Reserve fund set up to hold the premiums for finite reinsurance from a single insured party. Earns interest over the fixed term, and through an agreed profit commission formula returns to the insured whatever principal and interest is not paid out as losses and net of a risk premium that will be charged by the reinsurer for assuming the timing/investment risk due to a loss frequency or severity that was not anticipated.

Financial Risk Management (FRM): A method of mitigating risk in various financial transactions.

Financial Risk Management Instrument: Includes both insurance and non-insurance instruments.

Finite Risk: Re/insurance policy with an ultimate and aggregate limit of indemnity often with direct link between premium and claim amounts.

Forward Contract: Commits user to buying or selling an asset at a specific price on a specific date in the future.

Global Environment Facility (GEF): The GEF is the financial mechanism of the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC).

G20 Countries: The G20 countries account for 86.7 per cent of the world's GDP and for 65.4 per cent of the total global population. The full membership includes Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, UK, USA and the EU presidency.

Hedging: A financial markets term for undertaking risk management activities; usually involves taking a position (to purchase or sell financial instruments) that is counter to the original transaction.

Hot Dry Rocks (HDR): HDR technology involves developing an underground heat exchanger in buried hot granites (250–300 degrees C) through opening up existing joints by hydraulic pressure.

Index Based Contracts: Options contracts based on an index. The value of the derivative is derived from the index. Variation between actual losses and those derived from the index creates basis risk.

Insurance Guarantee Funds: Funds set up to meet in full or part the cost of claims from insolvent insurance companies.

Insured: One who transfers a risk to another party. The person named in the agreement of indemnity from an insurance company (or person) affording them indemnity from risks set out therein. Interchangeable with 'Assured'.

Insurer: The insurance company who has agreed to accept the risk and to pay monies by way of an indemnity to an insured in the event of loss. The amount paid can be an agreed amount or actual loss sustained.

Interest Rate Swap: An exchange of financial instruments to give each party their preferred position.

Investment Grade: In the context of bond ratings, the rating level above which institutional investors have been authorized to invest.

Least Developed Countries (LDCs): LDCs are generally characterized by low levels of economic activity and poor quality of life. There are 48 countries on the UN list.

Leverage: Also known as 'gearing', leverage generally refers to a high level of debt financing relative to equity. It can also imply trading on margin—particularly derivatives.

Legal Liability: The responsibility imposed under law upon one person by another, whether by negligence (common law), statute or contract.

Liability Insurance: Provides protection for the insured against loss arising out of his legal liability resulting from injuries to other persons or damage to their property.

Loss or Damage: Loss is technically distinguished from damage in fire insurance when all or any portion of the property insured is consumed. 'Loss' designates that portion which is entirely consumed, while 'damage' designates that part of the property which is not consumed, but remains in a damaged condition after a fire.

Mutual Insurance Company: Organization in which members or policyholders share risks, and premiums go into a pool from which claims and expenses are met.

Option: A contract which gives the buyer the right, but not the obligation to buy or sell a particular asset at a particular price.

Over-the-Counter (OTC): A derivative that is not traded on an exchange but purchased from an investment bank.

Policy: The actual insurance contract with all its details.

Property Insurance: Provides financial protection against loss or damage to the insured's property caused by 'all risks' of physical loss or damage unless otherwise excluded, or on a 'named perils' basis to include such risks as fire, smoke, windstorm, hail, explosion, aircraft, motor vehicles, vandalism, rioting, civil commotion, etc.

Project Finance: Often known as off-balance sheet or non-recourse finance since the financiers rely mostly on the certainty of project cash flows to pay back the loan, not the creditworthiness of the project's owners.

Proportional Treaty: A reinsurance contract which takes a defined pro rata share of all risks within treaty limits.

Put Option: Gives seller the right to sell – the buyer is obliged to buy.

Quota Share: Reinsurance on a percentage basis of a fixed share of all risks.

Reinsurance Pool: Pooling of reinsurance risks within fixed limits of a group of reinsurers.

Retention: The strategy of retaining some of the cost of risk in the insurance contract. 100 per cent retention is known as Self-Insurance.

Risk-Based Capital: System of calculating insurance capital required for a specific risk or 'package' of risks with reference to different elements of risk.

Risk Exposure: An exposure to loss (property, liability etc.).

Risk Financing: Methods of funding the cost of risk (e.g. insurance, credit and financial reserves).

Risk Linked Securities: Generic name for securities such as CAT Bonds.

Risk Management: Identification, evaluation and control of risk.

Securitization: Securing the cash flows associated with insurance risk. Securitized insurance risk enables entities, which may not be insurance companies, to participate in these cash flows.

Self-Insurance: Funded from an organisation's own financial resources.

Strike Price: Price at which future or option contract operates.

Swap: Two companies exchange cash flow linked to a liability or asset.

Timing Risk: Risk that claims may become payable earlier than expected.

Tradable Green Certificates: TGCs are generated by the certification of RE production. Certificates are tradable and consumers are required to prove that they have reached renewable energy production quotas by purchasing certificates.

Tranche: Term to describe a specific class of bonds within an offering. Usually, each tranche offers varying degrees of risk to the investor and is priced accordingly.

Transfer of Risk: The transfer of the financial consequences of a risk to another by legal contract and/or insurance.

Value-At-Risk: Often abbreviated as VAR, these are a class of models used by financial institutions to measure the risk in complex derivative portfolio positions.

Weather Hedge: Product which allows buyer to partially or fully offset climate-related risks.

World Bank Group: Includes the following sub-groups: IBRD, IDA, IFC and MIGA.

Executive summary

003917

This study was funded by UNEP's Sustainable Energy Finance Initiative (SEFI) and conducted by a consortium of consultants and advisors led by Marsh Ltd with the objective of providing an overview of the barriers and/or risks affecting investment in Renewable Energy (RE) projects, 'financial risk management' instruments currently supporting RE projects and those that could be developed to reduce uncertainty and facilitate more efficient and effective financing of such projects.

The study was undertaken under the premise that current approaches to financing renewable energy are inadequate to realize the potential of these technologies to meet expanding energy needs while helping to mitigate climate change and other adverse environmental impacts¹. Public interventions are therefore needed to help accelerate RE development, commercialization, and financing.

The full study on which this Executive Summary is based (hereafter referred to as 'the main document') is available online at www.uneptie.org/energy/act/fin/index.htm.

Key messages of the report include:

Traditional insurance products are gradually becoming more widely available to the RE sector. However, 'institutional inertia' is preventing any significant progress with regard to product development. The tendency in the insurance industry is to readapt existing products rather than create new ones. Substantially more engineering tests must be carried out on RE technologies for the purposes of actuarial studies: there is an important role for the public sector in the sponsorship of this work.

Capital allocation within insurance companies is dependent on senior management being convinced that the business case for underwriting a certain class of risk meets their minimum criteria. Most small projects have a high opportunity cost and rarely exceed the internal hurdle rates required by management. There is currently an impasse in RE market development in part due to restrictive thinking. Fresh approaches and financial innovation are required. Based on the responses to this study, the hypothetical provider of such innovation in the insurance markets is likely to be a small- to medium-sized specialist risk transfer/finance operation with dedicated capital and low overheads. Such an enterprise could facilitate and attract additional capital by providing industry leadership. However, few such operations currently exist.

¹ Adapted from the G8 Renewable Energy Task Force

This study proposes that there is a gap between the developers, their advisors and institutional investors. On one side are the boutiques and consulting firms that really interact with the majority of renewable energy (RE) project developers. On the other side are the major financial institutions who interact at a high level with policy makers but, despite good intentions, are usually too large/inflexible to operate usefully in the RE space at this time. There is a useful role for the public sector to act as a 'mezzanine player' or bridge between the expertise, creativity and nimbleness of boutiques and the distribution networks, balance sheet and market influence of major financial institutions.

New financial risk management approaches and instruments are evolving and can be adapted to meet the needs of the RE sector. These include; risk finance approaches, alternative risk transfer products, specialist underwriting vehicles, credit enhancement instruments and indexed derivatives. Insurance collateralized debt obligations may be one method of directing capacity at particular insurers and lines of business. There is an ongoing role for risk mitigation and especially credit enhancement products provided by Multilateral Financial Institutions (MFIs), Official Bilateral Insurers (OBIs) and Export Credit Agencies (ECAs).

A key objective of this study is to accelerate plans to develop product blueprints for actual application in the market. **A learning-by-doing approach to developing new and commercially acceptable RE financing and risk management products could be usefully adopted through focused interactions between the public sector, specialist financial boutiques/insurers and global financial intermediaries.** This can be accomplished through joint ventures that combine the perceived support and credit rating of public sector entities with the creative vision of specialist private boutiques and the distribution networks of large financial services companies.

A number of programmes are suggested in section 6. **The main suggestion is to develop Special Purpose Underwriting Vehicles (SPUVs) with dedicated capacity for the RE sector.** An example of a risk management start-up operation from the forestry sector demonstrates the possibility for specialist Lloyd's syndicates to provide cover to commercially viable RE projects. There are a variety of SPUV structures which could be developed. The nature of the cover to be provided determines the level of public support required. An insurance company providing standard fire and wind storm protection for forestry requires nominal public support unless/until it takes on broader environmental agendas. However, the **technology and operational** risks inherent in RE projects mean that providing standard insurance cover is actually quite complex because of the data requirements. **Public sector support is required for engineering as well as project risk rating studies for most Renewable Energy Technologies (RETs) that have limited operational experience.**

1. Renewable Energy Technology assessment

003917

Table 1 provides an overview of renewable energy technology (RET) characteristics, maturity and resource potential. In short, renewable energy source is abundant and there are many promising options for converting it into useful energy. The relative merits of renewable energy vary greatly depending on the scale, capacity, and status of individual technologies, natural resource availability and characteristics, location and a number of other factors. But it is generally true that renewable energy resource is infinitely available in all regions of the world, and that the conversion efficiencies for harnessing it and the costs involved have improved considerably, and continue to do so. Furthermore, RE technologies also represent a paradigm shift in innovation compared with conventional energy-supply systems.

| Table 1: Renewable energy potentials | | |
|---|---|--|
| Resource | Technical potential (TWh/year) | Energy conversion options |
| Direct solar | In relation to energy demands, virtually unlimited. | Photovoltaics. Solar thermal power generation. Solar water heaters. |
| Wind | Very large in relation to world's electricity demands, especially offshore resources. | Large-scale power generation. Small-scale power generation. |
| Wave | Not fully assessed but large. | Numerous designs. |
| Tidal | Not fully assessed but large. | Barrage. Tidal stream. |
| Geothermal | Several orders larger than the amount currently used. As with other technologies, use depends on costs not the quantity of resource technically available, which is huge. | Hot dry rock, hydrothermal, geopressed, magma, shallow geothermal systems (only hydrothermal and shallow geothermal systems currently viable). |
| Biomass | Potential varies greatly between countries, but can complement agriculture and protect watersheds and biodiversity. | Combustion, gasification, pyrolysis, digestion, for bio-fuels, heat and electricity. |

Source: Imperial College Centre for Energy Policy and Technology (2002)

2. The role of financial risk management instruments

003917

Investors and lenders are naturally averse to risks that can give rise to unexpected negative fluctuations in a project's cash flows or value. To attract financing, there is a fundamental requirement to manage risk in a way that minimizes the probability of an occurrence that could give rise to a negative financial impact on the project.

This study focuses on some financial risk instruments that can help transfer specific risks away from project sponsors and lenders to insurers and other parties better able to underwrite or manage them. A diverse range of risk management approaches are considered, including: insurance/reinsurance; alternative risk transfer; risk finance; contingent capital; and credit enhancement products.

When considering a project, a financier will usually prepare a risk/return analysis to assess each major risk and the means to mitigate its potential impact on the project. Assessing the returns involves verifying the potential 'downside' cost ('what might go wrong') and 'upside' revenue projections ('what might go right'), and then comparing the financials of the project with the cost of financing to be used. This practice of risk allocation and due diligence is necessary but often expensive and is carried out to provide the financial community with a better understanding of applicable technologies, relevant markets and any new approaches to managing risks. Unfamiliar technologies, developers and jurisdictions require proactive sponsorship at senior management level. Without sufficient commercial incentive, this is difficult to attain.

As a result, most small-scale RE projects, and even large deals in potentially risky jurisdictions, are simply not considered by commercial financiers. When these projects find private financing beyond the developer's equity, it is often as a result of an eclectic support group that may comprise: specialist/boutique consulting and financial advisory firms; high-net worth individuals seeking tax shelters; community and local finance schemes; equipment leasing arrangements; and, occasionally, corporate sponsorship by a utility. Attempts to 'bundle' small projects together to achieve critical mass for financing purposes have, to date, been unsuccessful. However, 'roll-out' deals comprising multiple small installations of the same technology have been completed. Table 2 gives consideration to the various forms of finance available and their relative merits in the context of RE projects.

To attract financing, there is a fundamental requirement to manage risk in a way that minimizes the probability of an occurrence that could give rise to a negative financial impact on the project.

Typically, small RE projects or deals using new or adapted technologies (where limited operational hours can be demonstrated for actuarial purposes) require equity sponsorship of at least 25 per cent and often 50 per cent of the total value of the project. As the real or perceived risk associated with a RE project increases (say, due to host country political risk), lenders require a larger equity component to finance the project. Equity investors take a greater share of the burden of capital investment and this is onerous for small-scale developers.

Table 2: Forms of finance

| Type of finance | Merits in RE context |
|--|--|
| <p>Private Finance from personal savings or bank loans secured by private assets.</p> <p>Grants from the public sector are often designed to help a project developer share the costs of early stage development.</p> <p>Risk Capital is equity investment that comes from venture capitalists, private equity funds or strategic investors (e.g. equipment manufacturers).</p> <p>Mezzanine Finance groups together a variety of structures positioned in the financing package somewhere between the high risk/high upside equity position and the lower risk/fixed returns debt position.</p> <p>Corporate Finance, debt provided by banks to companies that have a proven track record, using 'on-balance sheet' assets as collateral. Corporate sponsor required to accept risk and potential reward of a project in its entirety.</p> <p>Project Finance, debt provided by banks to distinct, single-purpose companies, whose revenues are guaranteed by credit worthy off-take agreements. For renewable energy projects these are typically structured as Power Purchase Agreements (PPAs).</p> <p>Participation Finance, similar to project finance but the 'lender' is a grouping of investors, for example a cooperative wind fund, that often benefit from tax and fiscal incentives.</p> <p>Risk Finance/Insurance Structures are used to transfer or manage specific risks through commercial insurers and other parties better able to underwrite the risk exposures and 'smooth' revenue flows.</p> <p>Consumer Finance is often required for rural clients as a means of making modern energy services affordable. Once client creditworthiness is proven, the portfolio can be considered an asset and used as collateral for financing.</p> <p>Third-party Finance, where an independent party finances many individual energy systems. This can include hire-purchase, fee-for-service and leasing schemes, as well as various types of consumer finance.</p> | <p>Can often be the only available finance for small-scale projects.</p> <p>Key to moving certain RETs such as wind/wave/tidal forward to commercialization.</p> <p>Besides the developer's own equity and other private finance, risk capital is often the only financing option for RE projects.</p> <p>Good scope for public/private funding. A number of RE mezzanine funds are now being targeted in developing countries.</p> <p>Mainly available to mature companies with strong asset base, debt capacity and internal cash flows. Structured finance in conjunction with the public sector offers scope for development. IFC deals offer some examples.</p> <p>Long-term off-take agreements enable non-recourse finance for reasonable tenors. PPAs tend to be deeply discounted which reduces value to developers. Sometimes regulatory risk is excluded which reduces lender appetite for such non-recourse debt. Limited scope for off-grid RE projects.</p> <p>May be prepared to provide principal finance, which does not require long-term PPAs particularly when risks can be proactively managed and hedged.</p> <p>Promising scope for developing new RE financing approaches in countries with functioning insurance markets.</p> <p>Various types of micro-credit schemes are now being deployed in the solar home system market, for example, which often involve risk-sharing at the local and institutional levels.</p> <p>Asset backed finance offers some flexibility over traditional project finance structures and there may be some tax benefits.</p> |

2. The role of financial risk management instruments

Many RE projects do not get beyond the planning stage as a result. There is a need for innovative structures that can fill the funding gap between the equity and debt available to a project.

In developing countries, the financing of rural energy programmes is usually addressed through government subsidies, donor programmes and private cash sales of small systems adapted to local conditions. Quasi-equity or mezzanine finance has had some limited application in developing country situations. The 'burden of proof' requirements² for off-balance sheet project finance are usually too onerous for RE projects in these locations because of real and perceived credit risks. Some major transaction costs are fixed and so economies of scale are favoured.

Investor confidence is critical to attracting financing. As a result, the type of financing available to renewable energy projects is largely dependent upon the risk management approaches adopted by the project's management and the instruments available to mitigate real and perceived risks.

The most significant risk allocation tools are the contracts³ governing each project participant's responsibilities. Ultimately the investors and lenders attempt to strike a deal that allocates risks cost-effectively and provides adequate transparency as well as monetary safeguards to protect themselves.

Where risks are insurable⁴, commercially available insurance can play an essential part in ensuring that a successful project finance structure is achieved by transferring risks considered unacceptable away from investors/lenders and to the insurance markets.

Generally, revenue exposure (as a result of project delays, damage/losses during fabrication, transport, installation, construction and operational stages) is of prime concern for financiers. Lenders require insurance due diligence to be undertaken to review the risks and the adequacy of the proposed insurance arrangements. These can be an integral part of developing contracts, clauses in credit and other agreements, and insurance-related conditions before reaching financial closure.

² Typical project finance requirements include: firm long-term fuel supply from, and power purchase agreements with creditworthy parties; fixed price, turnkey design and build contracts placed with experienced contractors; guarantees, warranties or bonds for completion and performance provided by sponsors and contractors; all contracts and insurance policies assigned to the bank, so that the lender can take over the project in the event of non-performance by the project company.

³ Including offtake agreements concerning resource availability and supply, power and tradable environmental permits.

⁴ Insurable risks generally are those that can be accurately quantified according to the likelihood and severity of losses from insured events and which meet certain legal, economic and social criteria.

003917

Investor confidence is critical to attracting financing ... the type of financing available to renewable energy projects is largely dependent upon the risk management approaches adopted by the project's management and the instruments available to mitigate real and perceived risks.

3. Overview of risks and barriers

003927

The study has identified, qualified and explored a number of key risks and barriers that can threaten investment in RE projects and thus prevent more rapid uptake of desirable technologies. The research methodology consisted of questionnaires, telephone interviews and literature reviews which captured a diverse range of expertise and insight to provide a holistic view of high level barriers categorized in a top down approach⁵.

At the broadest macro-economic level, barriers associated with investment in RE projects were categorized according to distinct but interrelated themes including:

- Cognitive barriers, which relate to the low level of awareness, understanding and attention afforded to RE financing and risk management instruments.
- Political barriers, associated with regulatory and policy issues and governmental leadership.
- Analytical barriers, relating to the quality and availability of information necessary for prudent underwriting, developing quantitative analytical methodologies for risk management instruments and creating useful pricing models for environmental markets such as carbon emissions permits.
- Market barriers, associated with lack of financial, legal and institutional frameworks to support the uptake of RE projects in different jurisdictions.

Just as there are gaps in the financing continuum relating to the different sources of capital needed to take a RE project forward to implementation, financial risk management instruments also suffer from barriers to implementation. These barriers are more prevalent in less developed countries because the financial, legal and institutional frameworks necessary for stable financial markets⁶ are not present.

The financing problem for the renewable energy sector as a whole relates to the way the resource is priced in the market compared with energy generated by conventional fossil fuels. Conventional market pricing models do not accurately

⁵ Research was carried out through telephone interviews, meetings and correspondence between 29 October 2003 and 15 February 2004 involving various stakeholders including (re) insurance and financial institutions; project developers, NGOs, policy makers; and multilateral financial institutions.

⁶ Consideration of the surrounding economic environment is of paramount importance in understanding the gaps in the financing continuum and the opportunities for adapting existing, and developing new, financial risk management instruments for RET applications.

reflect environmental externalities including CO₂ emissions produced from the generation of energy from fossil fuels. Similarly, environmental and wider sustainable development benefits associated with RE projects are not accurately reflected in the pricing of renewable energy sold to consumers.

At a macroeconomic level, it is evident that stable policy support measures are needed to mitigate the real and perceived risks for investors in renewable energy projects and technologies. Only **long-term** policies can change the familiar pattern of commercial investment away from conventional energy sources in favour of large-scale investment in clean technologies. Respondents to questionnaires frequently cited lack of confidence in regulatory policies because of changing national and international prerogatives.

At the project level various risks and barriers were explored, many of which contribute towards the difficult commercial conditions for the sector. Some persistent challenges such as the often-small scale of projects, technology efficacy risk, resource availability and supply risk⁷, relate particularly to the RE sector. Other barriers are generally applicable to utility projects (especially in developing countries) such as long lead times, high up-front costs, credit risk, construction delays, business interruption and physical damage issues.

From an investment perspective these various risks and barriers may have differing levels of financial significance depending on the management of the project, host country and the other investors in the deal. The presence in a deal of, say, an official bilateral insurer or the IFC can dramatically reduce the perceived credit risk to lenders. Credit enhancement has proven effective in attracting foreign capital to many developing country investment projects.

Leaving aside the issues of 'small scale' and project location for the time being, the financial sector requires a better understanding of RE-specific **resource, technology and operational risks**. In general, a lack of data and institutional inertia are preventing the development of new/better risk management products.

Table 3 highlights some of the key risk issues affecting different RE technologies. Technology and operational risks are the principal deterrents to attracting appropriate commercial insurance cover.

Insurers and financiers penalize new or poorly understood processes and technologies with prohibitive premiums and terms. 'Institutional memory' amongst some insurers lingers on from the 1980s when new wind turbine technologies led to damaging losses in the onshore insurance markets and resulted in a significant decline in available capacity. Institutional memory was one of the leading reasons that insurers were unwilling to underwrite onshore

003817

Only long-term policies can change the familiar pattern of commercial investment away from conventional energy sources in favour of large-scale investment in clean technologies.

...the financial sector requires a better understanding of RE-specific resource, technology and operational risks. In general, a lack of data and institutional inertia are preventing the development of new/better risk management products.

⁷ Either in terms of assessing the resource or contracting the supply.

Table 3: Key risks/barriers associated with RE projects

| RET type | Key risk issues | Risk management considerations |
|------------------|---|---|
| Geothermal | <ul style="list-style-type: none"> • Drilling expense and associated risk (e.g. blow out). • Exploration risk⁸ (e.g. unexpected temperature and flow rate). • Critical component failures such as pump breakdowns. • Long lead times (e.g. planning permission). | <p>Limited experience of operators and certain aspects of technology in different locations. Limited resource measurement data. Planning approvals can be difficult. 'Stimulation technology'⁹ is still unproven but can reduce exploration risk.</p> |
| Large PV | <ul style="list-style-type: none"> • Component breakdowns (e.g. short-circuits). • Weather damage. • Theft/vandalism. | <p>Performance guarantee available (e.g. up to 25 years). Standard components, with easy substitution. Maintenance can be neglected (especially in developing countries).</p> |
| Solarthermal | <ul style="list-style-type: none"> • Prototypical/technology risks as project size increases and combines with other RETs e.g. solar towers. | <p>Good operating history and loss record (since 1984). Maintenance can be neglected (especially in developing countries).</p> |
| Small hydropower | <ul style="list-style-type: none"> • Flooding. • Seasonal/annual resource variability. • Prolonged breakdowns due to offsite monitoring (long response time) and lack of spare parts. | <p>Long-term proven technology with low operational risks and maintenance expenses.</p> |
| Wind power | <ul style="list-style-type: none"> • Long lead times and up-front costs (e.g. planning permission and construction costs). • Critical component failures (e.g. gear train/ box, bearings, blades etc). • Wind resource variability. • Offshore cable laying. | <p>Make and model of turbines. Manufacturing warranties from component suppliers. Good wind resource data. Loss control e.g. fire fighting can be difficult offshore due to height/location. Development of best practice procedures.</p> |
| Biomass power | <ul style="list-style-type: none"> • Fuel supply availability/variability. • Resource price variability. • Environmental liabilities associated with fuel handling and storage. | <p>Long-term contracts can solve the resource problems. Fuel handling costs. Emission controls.</p> |
| Biogas power | <ul style="list-style-type: none"> • Resource risk (e.g. reduction of gas quantity and quality due to changes in organic feedstock). • Planning opposition associated with odour problems. | <p>Strict safety procedures are needed as are loss controls such as fire fighting equipment and services. High rate of wear and tear.</p> |
| Tidal/wave power | <ul style="list-style-type: none"> • Survivability in harsh marine environments (mooring systems etc). • Various designs and concepts but with no clear winner at present. • Prototypical/technology risks. • Small scale and long lead times. | <p>Mostly prototypical and technology demonstration projects. Good resource measurement data.</p> |

⁸ The probability of success in achieving (economically acceptable) minimum levels in thermal water production (minimum flow rates) and reservoir temperatures.

⁹ Stimulation technology attempts to improve natural productivity or to recover lost productivity from geothermal wells through various techniques including chemical and explosive stimulation.

wind energy projects, and this could also account for the slow development of new insurance products for other RE projects. Many insurance practitioners highlight that, with the exception of onshore wind energy, there is a limited understanding of most RE projects and associated risks.

Generally speaking, underwriting processes and mentalities are rigid and inflexible to change and innovation. This 'institutional inertia' is reflected by the tendency in the insurance industry to adapt existing products rather than develop new ones specifically for the RE sector. For example, products that cover the resource supply risk better known as 'exploration risk'¹⁰ associated with drilling for Hot Dry Rocks (HDR) in **geothermal** projects are derived from conventional oil and gas exploration insurance. Resource risk is obviously quite different for each technology and the risks for a failed geothermal well are particularly costly.

Similarly, risks associated with securing long-term sustainable supplies of **biomass** will be of greater concern to financiers than the resource availability and supply issues associated with **wind, tidal** or **solar** projects. At the same time, the technology and operational risks associated with wind and **biogas** projects, such as component failure and controlling the fermentation process respectively, are of more concern to financiers than the more mature processes driving geothermal technologies.

There are a number of derivatives and insurance policies evolving to manage resource risk in the RE sector and generally. Some temperature related products are now exchange traded and structured solutions are available worldwide for precipitation and wind risk as long as weather data is available. As satellite-monitoring technologies continue to become less expensive, weather data will be more readily collected and the private sector will continue to improve weather-related RE resource risk management products.

However, the challenges posed by unfamiliar technologies are notoriously difficult to overcome in the commercial insurance market. Public sector support could be usefully extended to sponsor more product testing and pilot projects. The operational results of such publicly funded engineering studies could be made available to the commercial insurance market as long as several firms commit to use the data for actuarial purposes and develop some new products specifically designed for renewable energy technologies.

If commercial insurance policies were available for some RE-specific technology and operational risks then private sector investment in the sector could grow by a factor of four or more¹¹. Given the lack of confidence that

If commercial insurance policies were available for some RE-specific technology and operational risks then private sector investment in the sector could grow by a factor of four or more.

¹⁰ See footnote 8

¹¹ Combined estimates from commercial sources.

survey respondents had with regard to maintaining stable policy regimes, publicly-funded engineering studies may be a relatively inexpensive and uncontroversial approach to increasing the flow of funds into the RE sector.

Indeed, one of the most critical and fundamental concerns highlighted by investors and project developers alike relates to the fact that any investment made under a policy regime is exposed to the numerous reviews and potential changes which may take place between the time the investment is made and the time at which invested capital is fully repaid from project cash flows. Such regulatory risk is common to many infrastructure deals and particularly affects utilities. However, many fickle subsidy and price support regimes are RE-specific as governments find their way with energy policy and security issues.

At the same time, some types of price support mechanisms,¹² along with associated financial risk management instruments that can provide certainty around future RE obligations, will be needed to underpin the future value of any traded renewable energy or 'green' certificates. These will provide comfort about future cash flows and enable financiers to back projects on reasonable terms. In developing countries, PPAs often require official government guarantees. Sovereign guarantees are also discussed further in section 5.

The main document explores a number of commercial and non-commercial risk issues affecting developing countries. Empirical evidence demonstrates that private lenders are particularly sensitive to credit risk when considering instruments that could help to mobilize debt finance for renewable energy projects. Several lenders suggested that wider application of credit enhancement for local debt issues in developing markets would be quite useful. The role of the IFC and other institutional actors is being examined and the credit enhancement products they currently offer are being reviewed.

This study also gives consideration to the indirect barriers inhibiting the development of new risk transfer products. The research made clear that the most effective role for commercial insurance in supporting RE projects is technology dependent and conditioned by legal, political, social and economic factors which will vary from one country to another. Insurance industry practitioners emphasize that decisions to insure a particular risk are not taken on theoretical grounds, but in the light of practical experience and commercial considerations. These are the areas that policy makers should target when designing measures to increase investment flows to the RE sector.

¹² Price support mechanisms include feed in tariffs, investment subsidies, quota obligations (e.g. Renewables Obligation), fiscal incentives (e.g. tax credits), tendering systems (e.g. NFFO)

4. Existing insurance products for RE projects

The role of insurance

Insurance has an important role in supporting investment in RE projects by giving financial protection from delays or damage during the fabrication, transport, construction, and operational stages of a RE project – whether for technical reasons, human error or the forces of nature. Cover for loss of income can be a critical issue from a lender’s perspective, as it not only affects a project’s ability to pay its construction loan, but also affects the balance sheet of the entire project.

The industry is familiar with assessing many of the wide-ranging risks associated with different stages of conventional energy and infrastructure projects. Currently there are many more examples of existing risk transfer instruments developed by the insurance industry (see Table 4) and applied to RE projects than compared with other non-insurance financial instruments which are at a more evolutionary stage of application (see section 5). The ‘traditional’ products which insurers respond to include: contractors risks; property damage; machinery breakdown; delays in start up/business interruption; errors and omissions; as well as legal liability, political risks and some financial risks such as currency convertibility and default.

Some of the specialist underwriting practices and principles associated with the energy industry will be similar for RE projects and their associated risks. It is important to tap this specialist expertise where crossover exists, especially for those risks associated with fabrication, transportation and installation of marine structures (e.g. offshore wind farms, wave and tidal facilities) and onshore drilling (e.g. geothermal).

Insurance can lower a corporation’s cost of capital and increase liquidity by reducing the financial impact of risk events. In order to bear risk in return for a premium an insurer must have sufficient information to be able to estimate with a sufficient degree of accuracy the likelihood and severity of losses from the insured events. Although pricing structures for wind projects are now standardized through rating programmes, most RE projects do not have the required statistical data for measuring probability distributions and correlations between random loss events.

Notably, research suggests that for RE projects, with the exception of some products (namely property damage and liability insurance) for wind projects, most standard products have underwriting restrictions. Typically insurance is arranged on a case-by-case basis and normally entails comparatively higher prices and restrictive terms

Insurance can lower a corporation’s cost of capital and increase liquidity by reducing the financial impact of risk events.

... most RE projects do not have the required statistical data for measuring probability distributions and correlations between random loss events required for insurance cover ... Typically insurance for RE projects is arranged on a case-by-case basis and normally entails comparatively higher prices and restrictive terms and conditions.

and conditions. Projects of less than USD15 million (excluding small wind projects) have difficulty finding insurance cover, and as a result, financing.

Insurance capital allocation

Capital allocation within insurance companies is dependent on financial management being convinced that the business case for underwriting a certain class of risk meets their minimum underwriting criteria. Included within such an assessment is a charge for the risk capital employed, a risk premium and an administrative cost. Business acquisition, underwriting due diligence and account servicing costs are the same for a small project as for a large one. For medium- to large-size insurance companies, central cost allocation manifested through the administration costs are a significant barrier to entry. Consequently most small projects have a high opportunity cost and rarely exceed the internal hurdle rates required by management.

This would suggest that at this stage of the renewable energy market's development, where financial innovation is required to support the development of small- to medium-size enterprises and projects, a specialist and focused risk transfer/finance operation with dedicated capital and low overheads will be a prerequisite to provide efficiently priced risk management solutions for small-scale developers. This capacity will need to be supported by a strong technical/engineering evaluation capability that can adequately assess the technology risk. Financial support and investment from the public sector is often required to overcome political and regulatory risk concerns. Perhaps some of these funds could be more usefully deployed sponsoring engineering tests and pilot projects for commercial actuarial studies and subsequent product development.

Existing availability of insurance for RE projects

This section focuses on 'traditional' products that are available or have been transacted for RE projects. Wind energy projects are the most commercially viable RE technology, and the technology with which the insurance industry has most experience and capacity to respond at present. Table 4 provides an overview of the various 'traditional' insurance products, and Figure 1 provides generic insurance cover available for RE projects.

Wind energy projects

Until recently, much of the insurance for commercial **wind energy** projects, owned and developed by larger parent companies in the power sector, has been provided under the main property insurance 'package' covering the parent companies' power assets worldwide. Although providing much needed early capacity for wind energy projects, the use of (unspecialized) parent company packages did not provide adequate cover to the unique risk profile of the wind sector (especially for offshore wind projects).

Following an early period of underwriting losses the insurance market for construction and operation of onshore wind projects has expanded somewhat

Table 4: Overview of traditional insurance products available for RE projects

| Risk transfer product | Basic triggering mechanisms | Scope of insurance/risks addressed | Coverage issues/underwriting concerns |
|---|---|---|--|
| Construction All Risks (CAR)/ Erection All Risks | Physical loss of and/or physical damage during the construction phase of a project. | All risks of physical loss or damage and third party liabilities including all contractor's work ¹³ . | Losses associated with cable laying such as snagging can be significant for offshore wind projects ¹⁴ . Quality control provisions for contractors. |
| Delay in Start Up (DSU)/Advance Loss of Profit (ALOP) | Physical loss of and/or physical damage during the construction phase of a project causing a delay to project handover. | Loss of revenue as a result of the delay triggered by perils insured under the CAR policy. | Cable laying risk. Loss of transformer. Lead times for replacement of major items. Offshore wind weather windows and availability of vessels. |
| Operating All Risks/ Physical Damage | Sudden and unforeseen physical loss or physical damage to the plant / assets during the operational phase of a project. | 'All risks' package. | Explosion/fire concerns for biogas, geothermal. Increase in fire losses for wind. Lightning. Quality control and maintenance procedures. |
| Machinery Breakdown (MB) | Sudden and accidental mechanical and electrical breakdown necessitating repair or replacement. | Defects in material, design construction, erection or assembly. | Concern over errors in design, defective materials or workmanship for all RETs. Turbine technology risk. Scope and period of equipment warranties. Wear and tear (excluded from MB). |
| Business Interruption | Sudden and unforeseen physical loss or physical damage to the plant/assets during the operational phase of a project causing an interruption. | Loss of revenue as a result of an interruption in business caused by perils insured under the Operating All Risks policy. | Cable/transformer losses represent large potential BI scenarios. Lead times for replacement of major items. Offshore wind weather windows and availability of vessels. Supplier/customer exposure (e.g. biomass resource supply). |
| Operators Extra Expense ¹⁵ (Geothermal) | Sudden, accidental uncontrolled and continuous flow from the well which can not be controlled. | All expenses associated with controlling the well, redrilling/ seepage and pollution. | Some geothermal projects require relatively large loss limits. Exploration risk excluded. Well depths, competencies of drilling contractors. |
| General/Third-Party Liability | Liability imposed by law, and/or Express Contractual Liability, for Bodily Injury or Property Damage. | Includes coverage for hull and machinery, charters liability, cargo etc. | Concern over third-party liabilities issues associated with toxic and fire/explosive perils. |

¹³ Scope of activities for insurance cover includes, but is not limited to: procurement; construction; fabrication; loading/unloading; transportation by land, sea or air (including call(s) at port(s) or place(s) as may be required); pile driving; installation; burying; hook-up, connection and/or tie-in operations; testing and commissioning; existence; initial operations and maintenance; project studies; engineering; design; project management; testing; trials; cable-laying; trenching; and commissioning.

¹⁴ Cables for wind projects represent a high concentration of value for relatively horizontal risk exposure.

¹⁵ Often forms part of a Package Policy including sections for Property Damage and Liabilities.

over the past three years as the technology has matured and the size and number of projects has increased. A competitive insurance marketplace now exists for onshore-operating wind energy projects with a selection of many leading (re) insurers providing physical damage coverage with typical premium rates of approximately 0.3–0.4 per cent of total insured property value.¹⁶

In the offshore market, as projects experience a greater number of successful operating hours, and as underwriters' technical understanding and evaluation of the risks improve, increased capacity should become available. Although, still only forming a very small proportion of underwriters overall portfolios, insured limits of up to EUR300 million have been placed for offshore projects. There should be sufficient capacity in the market place to cover higher insured values and limits as projects grow, while the loss records of existing projects will have a bearing on the attractiveness of these classes of insurance.

Delays or damage during fabrication, transport, installation, testing and commissioning can affect the revenue profile of a project; consequently, the construction stage of a wind farm is the key area of concern for investors. During the construction stage of onshore wind energy projects there are a variety of policies available that provide comprehensive and wide coverage for all risks of physical loss or property damage, delay in start-up and third-party legal liabilities.

Restrictions on insurance cover exist for certain offshore construction projects because the offshore construction process presents a higher risk than onshore and demands a stage-by-stage rating approach, which is reflected by higher premiums and deductibles. Typically for an offshore wind energy construction project premium rates would be approximately 2 per cent of the estimated project cost compared with premium rates for onshore construction of 0.4–0.6 per cent.

Once each turbine has reached an operational state, a new operational 'all risks' policy takes effect and design features and collision risk issues become more significant. Increasingly, insurers require projects to demonstrate what loss control measures are in place to minimise losses from high wind, freak wave conditions, fire and lightning and vessel collision.

Similarly, rigid restrictions apply to the design and technology risks associated with wind turbines. For example some restriction clauses require specification of component replacement after 5 years' operation or 40,000 operating hours with certain cover available for consequential losses arising from faulty design and workmanship. The faulty part itself is excluded. Insurers currently do not provide broad design cover for many new and prototypical turbines. Project developers therefore have to rely on the warranties provided by turbine manufacturers as a means of managing the risk of defective turbines. However, the creditworthiness of the turbine manufacturer then needs to be considered.

¹⁶ Premium rates vary depending on the risk profile and experience of the project and its operator.

As projects with new, larger turbines emerge, e.g. 5 MW prototypes currently being tested, it will become increasingly difficult to secure appropriate insurance cover for 'defective parts' and any consequential losses.

A possible solution may lie in the contractual arrangements that are used in parts of Europe for wind energy projects. Some of the large turbine manufacturers now offer Contractual Service Agreements (CSAs) which guarantee the technical availability of the system over the term of the financing agreement.

Manufacturers receive payment per kilowatt hour generated, in return for which they guarantee to cover all maintenance and repair costs, including possible replacement of expensive components such as rotor blades, gearboxes or generators. This type of service agreement can provide greater confidence to underwriters that the technology and operating and maintenance risks associated with wind energy projects are being better managed, which could assist in creating greater capacity and broader coverage with reduced premiums.

A further concern for underwriters relates to the potential of business interruption losses for offshore wind projects. Loss of a single turbine would lead to an insignificant business interruption claim for the wind farm, while any loss to the export cable or transformer could lead to a significant interruption to the overall electricity output of the farm. The premium rates for offshore business interruption will therefore vary significantly depending on the design of the project. For any **Delay in Start Up** insurance required during the construction period of an offshore wind project, approximate premium rates in the range of 2-3 per cent of annual gross revenue could be expected. Furthermore, this may become an increasing problem as the numbers of offshore installations increase, which might put a strain on the supply and availability of marine infrastructure (e.g. appropriate vessels) to service sites and repair and replace damaged items.

Geothermal energy

Geothermal projects face significant upfront capital investment for exploration, drilling wells and the installation of plant and equipment, and often employ some degree of public assistance. Due to the fact that the geothermal environment is quite different from the petroleum environment, especially in terms of higher temperature, more corrosive fluids, and generally harder rocks, drilling can be inherently expensive and risky, and the costs can vary between EUR1 and 5 million depending on the geological nature of the reservoirs, the depth of the wells to be drilled, the local authorities and available service industries involved. Generally speaking, the risks associated with drilling wells are well understood and financiers and insurers are more concerned with the application of petroleum industry expertise in a very different geothermal environment, unproven stimulation technology¹⁷ and the technical elements for integration of geothermal electricity.

¹⁷ Stimulation technology attempts to improve natural productivity or to recover lost productivity from geothermal wells through various techniques including chemical and explosive stimulation.

Due to the significant upfront capital outlay for geothermal projects and the potentially lengthy period before revenue generation, financiers are particularly concerned with any risks and/or expenses that may delay or prevent the project from meeting its debt obligations.

Operators Extra Expense insurance is adapted from the oil industry and is often required by lenders for geothermal projects as it is designed to protect the policy holder from any extraordinary expenses or risks associated with drilling exploration wells and operating production platforms. The main expenses that trigger the policy include costs associated with controlling a well or blow-out,¹⁸ the costs of redrilling or restoring a well, and the costs of remedial measures associated with seepage and pollution. Although seepage and pollution pose less of a risk to geothermal projects compared to oil and gas projects, the expenses associated with hiring specialist personnel to control blow outs, and the potential for casualties is still of major concern to financiers. Insurance cover for standard physical damage and operators' extra expense is becoming more widely available and cost-effective.

Exploration risk – the risk of not successfully achieving (economically acceptable) minimum levels of thermal water production (minimum flow rates) and reservoir temperatures – represents one of the key barriers to investment in geothermal projects. Traditionally, the public sector has had to cover this risk but recently a public/private initiative has been developed by Rödl & Partner with a private sector insurer. The insurance cover provides protection against the flow rate not achieving an economically acceptable level and has significant scope for large-scale applications.

Protection against breakdown in key components such as water pumps is also of concern to lenders as this can delay or interrupt the successful functioning and revenue generation of the project. Typically the lack of operating experience for such projects (operators and components) can restrict the cover available.

Biomass/biogas

Biomass/biogas projects suffer significantly from resource supply risk and small scale. One issue that comes up repeatedly when seeking finance for biomass/biogas and cogeneration projects is security of fuel supply and fuel price volatility. Marsh Ltd are involved in the development stages of several large biomass/waste-fuelled power generation facilities, all of which have a fuel/waste supply exposure, which is preventing the projects from reaching financial close.

Crop yield insurance may be a solution where energy crops are involved but traditionally this cover been difficult to come by for reasons of scale and non-standard crops. A form of business interruption cover is required as well as

¹⁸ Blow outs are the sudden, accidental, uncontrolled and continuous flow from the well of the drilling fluid, oil, gas or water, above the surface of the ground or water bottom, which cannot easily be stopped, or which is declared by the appropriate regulating authority to be out of control.

instruments to secure long-term fuel supply contracts. However, no such products are available yet. Even standard business interruption cover can be difficult to purchase because of the length of the reinstatement period for biomass plants which are dependent upon continuity of fuel supply.

Machinery Breakdown and **Business Interruption** insurance is widely available for biogas plants that use tried and tested machinery. For waste to energy plants the technology risk is not considered an issue by many insurers as most of the technology involved is now mature, although manufacturing warranties are still a prerequisite. For biogas plants involving fermentation processes, technology and operational risks are a concern for underwriters as are health risks associated with noxious gases. Without strict safety procedures and operational experience for the technology and operators involved in controlling the fermentation process there are difficulties in obtaining wide coverage.

Wave/tidal/ocean current

The **wave/tidal/ocean current** sector is rapidly developing with many devices showing commercial potential. Whilst it will be a long time before underwriters are comfortable enough with the technology involved to start underwriting technology-based risks, some marine insurers are willing to provide cover for the construction, delay in start-up and liability risks associated with small demonstration projects. Typically for **Third-Party Liability** coverage for small scale wave projects with low limits of liability of around GBP25 million (in accordance with current Crown Estates Lease requirements if in UK waters) underwriters require minimum premiums of approximately GBP125,000 and high deductibles, which can be prohibitively expensive for small demonstration projects.

Machinery Breakdown cover has been provided for the world's first commercial scale floating wave energy converter, the Pelamis. This was only possible through independent verification by leading offshore engineers of the prototype design specifications and further verification of the whole system to give the project a high safety factor in a hundred-year storm. Typically, the survivability of the device in hostile marine environments and its location in relation to collision risks cause most concern for underwriters.

Solar PV

Solar PV often tends to be a small-scale, consumer product and so does not usually attract the attention of commercial insurers. For larger installations, where insurance is required and available, underwriters often cite the need for regular maintenance procedures to be in place as frequent breakdowns and wear and tear can cause attrition losses.

The commercial appetite for providing cover for this sector will improve as the size and value of installations increase. A good example of this is the proposed AUD800 million, 1 km-high solar tower to be developed in Australia for which

003917

Marsh Ltd has started placing construction and operational insurance. However, the remoteness of these applications and the availability of service industries to repair, replace and maintain these facilities will be of concern to insurers who write machinery breakdown and business interruption insurance.

Small hydro

Various liability covers for **small hydro** (generally up to 10 MW) are becoming more widely available. Large scale hydro is a well developed, long-term proven technology with low maintenance expenses and few operational risks or barriers. From a financing and risk management perspective, small-scale hydro installations benefit from a general understanding of the technology. Civil engineering works (weirs, channels) last for many years with suitable maintenance and the mechanical and electrical lifetime of a hydro power plant can be up to 50 years. In an increasing number of remote/rural parts of the world, small-scale 'run of river' and smaller storage reservoir systems are the leading source of renewable energy.

Figure 1: Generic RET risk transfer heat map, existing insurance products

| Risk Categories | Construction All Risks | Resource Supply / Exploration | Property Damage | Machinery Breakdown | Business Interruption | Delay in Start Up / Advanced Loss of Profits | Defective Part / Technology Risk | Contractors Overall Risk | General / Third-Party Liabilities |
|-----------------|--|-------------------------------|--|---------------------|--|--|----------------------------------|--|--|
| Wind (onshore) | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Wind (offshore) | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Solar PV | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | n/a | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Wave / tidal | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Geothermal | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Biogas | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Small hydro | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | n/a | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |
| Biomass | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Very limited cover | Very limited cover | Increasingly comprehensive and competitive cover | Increasingly comprehensive and competitive cover |

Availability of cover

-  Increasingly comprehensive and competitive cover—rates going down, cover being extended
-  Broad cover—leading markets available, standard rating available, possible high premiums / deductibles
-  Partial cover—growing market interest, some gaps in cover, limited capacity, high premiums / deductibles
-  Very limited cover—few markets, restrictive terms and conditions, many exclusions
-  No cover available from traditional insurance markets

5. Evolving financial risk management instruments that can support RE projects

The role of emerging risk management instruments

This section focuses on financial risk management instruments that are evolving or can be adapted to meet the needs of the renewable energy (RE) sector. These include alternative risk transfer (ART) products, specialist underwriting vehicles, weather derivatives, credit derivatives, and political risk insurance. This section also hosts a brief discussion on the potential role of the risk mitigation and credit enhancement products provided by Multilateral Financial Institutions (MFIs), Export Credit Agencies (ECAs) and Official Bilateral Insurers (OBIs).

Financial risk management instruments are evolving and can be adapted to meet the needs of the renewable energy sector.

Table 5 lists a number of the instruments reviewed. Some have already been transacted in RE projects/deals and others have the potential to be redefined or modified for use in the RE sector. The table identifies, for each instrument, some of the key issues which can prevent the successful application of that instrument under different economic conditions.

Of the products discussed below, weather insurance and derivatives are the most widely used in the RE sector. Some temperature products are traded on exchange markets. Reinsurers provide insurance-based precipitation indices amongst others. Derivatives market-makers can produce wind power indices that are well correlated with wind at both onshore and offshore sites. As with any insurance or derivative product, the critical factor in developing a new weather derivative/insurance contract is the availability of data.

Some instruments, such as **Partial Credit Guarantees** (PCGs) are generalist tools but their popularity with investors is indicative of the wider role that credit enhancement can play in transacting RE deals. Preliminary research indicates that a specific project grant could be usefully aimed at developing blueprints for RE-specific risk management products that can be commercially deployed by the private sector. Some of the instruments such a study would seek to readapt are discussed in Table 5.

Weather derivatives for RE projects

Renewable energy projects have a natural weather position and, directly or indirectly, this is often the most significant source of day-to-day financial uncertainty. **Weather Derivatives** are used to protect RE project revenue streams against the financial uncertainty associated with wind, precipitation and temperature variability. **Volumetric** risk associated with adverse weather conditions can be hedged using a wide variety of Over-the-Counter (OTC)

Table 5: Emerging financial risk management instruments for RE projects

| Risk mitigation product | Nature | Basic mechanism | Risks addressed | Key RET application issues |
|---|--|--|--|---|
| *Weather insurance/ weather derivatives | Hybrid of re-insurance and indexed derivatives | Contracts and traded/ OTC derivatives including weather-linked financing (e.g. temperature, wind, and precipitation). Risks transferred from project owners/sponsors to insurance and capital markets. | Volumetric resource risks that adversely affect earnings. | Requires accurate and robust data streams from satellites etc. |
| *Double-trigger products (integrated risk management) | Alternative Risk Transfer (ART) | Contracts or structures provided by re-insurers covering, for example, business interruption risks caused by a first trigger such as unforeseen operational problems that create a contingent event (e.g. a spike in electricity price). | Clearly defined contingent risks which adversely impact revenues. | Complex and relationship-intensive. Requires accurate and robust trigger definition. |
| *Contingent Capital | Risk finance (synthetic debt and equity) | Insurance policy that can take the form of hybrid securities, debt or preference shares provided by (re) insurer to support and/or replace capital that the insured would otherwise be forced to obtain in the open market at punitive rates. | Any contingent event that suddenly damages the capital structure of a project or enterprise. | Complex and relationship-intensive. Can be used in SPUV development. |
| *Finite Structure | Risk finance | Multi-year, limited liability contracts with premium calculated on likelihood of loss and impact. Smooths out volatility of events that adversely impact earnings/cash flows. Potential to spread high cash-flow impact losses over time. | 'Timing risk' that losses occur faster than expected. | Complex and relationship-intensive. Often relies on strong credit profile. |
| *Alternative Securitization Structures | Various types of asset-backed securities ('synthetic reinsurance') | Securitized risk finance instruments including Insurance Linked Securities (CAT Bonds)/Collateralized Debt Obligations issued with several 'tranches' of credit/risk exposure. Creates a risk transfer and financing conduit based on credit differentials. | Bundling of credit default, liability, trade credit risk together. CAT bonds address risks associated with natural catastrophes. | Pooling of energy, weather related or emerging market and resource supply risks. SPUV potential. |
| Captives or other pooling/ mutualization structures | Risk finance or ART | Self-insurance programme whereby a firm sets up its own insurance company to manage its retained risks at a more efficient cost than transfer to a 3rd party. Pooling through 'mutual' or 'Protected Cell' structures can further diversify risks amongst similar enterprises. | Property/casualty insurance. Can be adapted to include financial risks. | Mutualization/pooling mechanisms often require homogeneous risk. Initial capitalization requirements. |
| TGC or emissions reduction delivery guarantees | Insurance | Products provided by insurers and re-insurers to guarantee future delivery of 'credits' or, money to purchase credits in spot markets to fulfil contractual requirements. Risks transferred from project owner/investors to insurers. | Risks associated with delivery of TGCs or emissions reductions, including performance related and political risks. | Sound legal/regulatory framework required. Long-term policy support mechanism for RE needed. |
| GEF Contingent Finance Mechanisms | Grant, loan, guarantee | Contingent grant, performance grant, contingent/ concessional loans, partial credit guarantees, investment funds and reserve funds provided by GEF in conjunction with Implementing Agencies. Transfers some financial project risk. | Desirable but high-risk projects benefit from soft funding. | Process delivery is slow and appears complex. Limited resources. |
| Guarantee funds | Guarantee (credit enhancement) | Professionally managed funds that use donor capital to leverage commercial lending. Examples include the Emerging Africa Infrastructure Fund and (as yet unlaunched) GuarantCo. | Political and credit risks in emerging markets. | Designed for large infrastructure projects but have wider applications. |
| Guarantees from MFIs | Guarantee (credit enhancement) | Partial Risk Guarantee (covers creditor/ equity investors) and Partial Credit Guarantee (covers creditors) by World Bank Group and the Regional Development Banks. Flexible structures that do not require sovereign counter-guarantees are preferred. | Specific political risks (e.g. sovereign risks arising from a government default on contractual obligations) and credit default. | There are ad hoc applications of PCGs for RE project finance. Credit enhancements in any form help transact RE deals. |
| Export Credit Guarantees | Guarantee, export credit, insurance | Guarantees, export credits, insurance provided by bilateral Export Credit Agencies (ECGD etc.) and Official Bilateral Insurers (OPIC etc.). | Commercial and political risks involved in private sector trade/investment abroad. | Most ECAs/OBIs have limited RET experience. Need more data for underwriting. |

* Asterisk denotes the instruments that require fundamental need for sound financial, legal and institutional frameworks which generally limits the application of those instruments in least developed countries.

structures and several exchange-traded products. Temperature is still the most commonly traded weather product but other risks are gaining prominence. Wind power indices (WPIs) are available to wind farm developers in areas where there is sufficient data to create an index that is highly correlated to the wind flow into the turbine. Similarly, precipitation indices are available. Weather derivatives are increasingly offered as part of structured finance packages or 'quanto' hedges that may also include power and currency derivatives. As a general guide (to *all* derivatives), the more transparent the product, the cheaper it will be to use. The quality and robustness of available data is a barrier to the development of weather products for many regions but cheaper satellite monitoring systems are evolving to reduce this information deficit.

Adaptable credit products

Credit derivatives are useful for hedging certain types of credit risk, and aggregated credit structures could potentially be useful to the RE sector. These instruments allow brokers to repackage small and illiquid credits into tradable securities that can be distributed to a variety of investors. There are many specific corporate and some project-related credit products in OECD countries but credit derivatives in emerging markets are generally linked to sovereign debt. Products based on government bonds are of no use to RE projects but currently account for 80 per cent of the volume in emerging markets. Conversely, products that can aggregate ('bundle') poorly understood/small/illiquid credits and then attract capital from institutional investors could be quite useful to the RE sector and should be investigated further. **Credit Linked Notes (CLNs)** are currently estimated to account for about 10 per cent of emerging markets credit exposure. The interest and principal payments of CLNs are linked to the credit risk performance of 'reference assets' – a single company, a portfolio of companies, sub-sovereign debt or other assets such as a pool of RE projects. **(Synthetic) Collateralized Debt Obligation (CDOs)** first entered the emerging markets about five years ago. These CDOs combine securitization and credit derivatives to 'tranche' a pool of underlying default swaps into different classes of credit risk. The different tranches usually carry ratings ranging from triple-A to single-B. A final equity tranche is unrated and represents the 'first loss' in exchange for the highest return. A default swap, made with an external counterparty, represents the senior tranche and covers a certain percentage of the reference portfolio. The proceeds of the notes are invested in a pool of highly rated government securities. Principal and interest is paid to the highest rated notes first, while any losses are borne by the more junior tranches. This structure is popular with investors but expensive to put together without a template. There is ongoing convergence between the capital and insurance markets, and securitization structures are often hybrids that can fall into the categories of instruments called Alternative Risk Transfer (ART) set out below.

Risk finance vs. risk transfer

The main document describes at some length the process of risk management in terms of **risk retention** versus **risk transfer**. The retention decision is both a risk management and capital structure decision. An 'unfunded retention' is the retained risk of a project for which any losses are not financed until they have occurred, while a 'funded retention' means that specific funds are allocated to carry particular losses. A funded retention (also known as preloss financing) can either be 'paid-in' or 'contingent' capital. These various distinctions are important to make. Since few new technologies and applications are insurable, **risk finance**—effectively professional management of retained risk—can offer some revenue-protection solutions for RE projects that may be acceptable to financiers and thus help facilitate more transactions.

Evolving/adaptable risk management and 'new capacity' structures

Alternative Risk Transfer (ART) instruments (including captives for convenience) offer potential for innovation and extending the limits of insurability. ART products are organized as 'contracts, structures and solutions' and often include combinations of both risk finance mechanisms (captives/finite products) and risk transfer (Integrated Risk Management). For example, risk finance structures using **finite insurance** can be applied to smooth revenues for RE projects. The ability to make instalment payments into a reserve or 'experience' account over a period of years spreads out any losses over time and thus eliminates any sudden impacts on project operating revenues.

A **captive** insurance or reinsurance company is a type of organized self-insurance programme in which a firm sets up its own insurance company (usually in conjunction with a re/insurer¹⁹) to fund and manage its retained risks. Companies operating captives can provide insurance for some of their operating risks at wholesale cost. Most multinational corporations maintain their own captive re/insurer. Some large wind turbine manufacturers and a number of utilities already use captives but typically these are structured as part of a larger parent company self-insurance programme covering the companies' assets worldwide.

The captive arrangement can be quite useful for asset protection. A captive is legally able to accrue reserves against contingencies. The underlying business may take tax deductions for premiums paid, but the captive itself defers taxation, to the extent that it is able to accrue reserves. **Multi-parent** captives facilitate some sort of risk diversification across different firms. **Group** captives are often set up by industry trade associations. When each member is too small to justify having its own captive then this structure can make sense but the self-insured risks need to be similar to work.

¹⁹ The (re)insurer provides certification of coverage, reinsurance, loss control and mitigation advice, claims reserving, adjustment, risk management, underwriting, regulatory work, etc. in return for an annual fee.

003917

Protected Cell Companies and **Rent-a-Captive** structures may offer a potential solution for 'bundling' some smaller RE developers seeking pre-loss financing of retained risks. In general, there is some real potential for captives, captive-like structures and other risk finance vehicles to fill gaps in the RE risk management product base. Where no conventional insurance is available, specialist underwriting vehicles may be the only method of obtaining cover sufficient to attract finance. Indirectly, some RE projects, particularly those that are exposed to natural catastrophes such as windstorms, may form part of a wider portfolio of risk that is taken on by (re) insurers.

ART securitization structures such as **Insurance CDOs** are emerging as a new source of capital for smaller insurers in the USA. There have been five separate offerings in the USA over the past year that raised \$1.5 billion in new capital. The ratings agency Fitch expects the development of insurance CDOs to significantly affect the US insurance market in the coming year.²⁰ Several different small companies can pool debt together in one CDO to reduce underwriting costs and legal fees while increasing the issue's critical mass. Individually, small and mid-size insurance companies do not have easy access to capital markets, and so obtaining bank loans or raising equity capital is costlier as well as difficult to transact. Lack of risk capital during the recent hard insurance cycle has meant that smaller insurers have been unable to deviate from core lines of business. Access to the capital markets via insurance trust preferred CDOs will lower smaller insurers' cost of capital. It is the smaller insurers who are likely to start providing cover to the increasing number of community financed renewable energy schemes. Additionally, boutique insurers are not hindered by institutional inertia and are likely to become important sources of risk management expertise and new product development in the RE sector. The arrival of the insurance CDO market in the USA is a positive trend and the public sector should give some thought to guiding some potential European and emerging market Insurance CDO structures. With appropriate public sector guidance, locally-sensitive insurance capacity can be directed toward small-scale insurable (i.e. wind, biomass) RE projects.

Insurance Linked Securities (ILS also known as Risk Linked Securities) have a pay-off profile that depends in some part on the outcome of the reinsurance offered by the SPV issuing the notes. There are a growing number of examples of risks that can be insured using a securitization platform. The best known example is the **Catastrophe Bond** or 'CAT' Bond. These ILS usually follow a structure that is similar to a CDO and payments are linked to a portfolio of premiums and losses arising from natural disasters such as earthquakes, ice storms, tropical cyclones, tornadoes and other varied risks. There is scope for securitization structures to evolve to include a variety of RE-related risks as part of a portfolio of diversified energy, weather-related or emerging market risks.

²⁰ International Securitization & Structured Finance Report, 15 November 2003.

Initial support by multilateral or bilateral financial institutions (say, to provide credit enhancements to the senior tranche of an issue) would greatly assist the development of a market for such an instrument. Some RE-specific alternative securitization structures have already been undertaken; one notable transaction involved a large power utility company and its entire wind portfolio.

In the past five years, some debt issuers have started using commercial **Political Risk Insurance (PRI)** to achieve an investment grade rating, even when the foreign currency rating of the issuer's nation is sub-investment grade (or marginal). Although PRI can cover a number of risks, the ratings agencies usually only require currency inconvertibility and exchange transfer cover. This coverage protects investors against the inability of the borrower to convert interest and principal payments from local currency to hard currency (generally USD). Recently a number of such deals have been transacted and, conceptually, it would be straightforward to issue a PRI-enhanced debt issue to finance a large RE project. Indeed, emerging market project bonds have proven quite attractive to investors over the past year despite the generally poor condition of the high-grade fixed-income market.

Public sector instruments

The **Official Bilateral Insurers (OBIs)**—including the Export Credit Agencies or ECAs) including OPIC, NEXI, HERMES, Coface and the ECGD provide by far the largest proportion of investment insurance against the three basic political risks: expropriation, war/civil war, and currency convertibility/transfer as well as other non-commercial risk insurance. To date, OBIs have had little experience with RE support. However, OBIs take on project risks that private and MFI insurers will not, particularly in emerging markets where there are significant opportunities for technology exports. One example of an OBI-led RE deal is a novel repayment guarantee structure supporting the financing of a new wave power plant in Spain. A deal relying on an OBI credit enhancement to help market an issue of corporate bonds/notes has already been done in the telecommunications sector in Uganda and similar deals can be done in other sectors/countries. There is a large role for these bilateral insurers to play in future public-private interactions designed to bolster investment into the RE sector.

With clear direction from their governments and shareholders, ECAs could develop new products and approaches to address the specific requirements of RE projects. Some of these could be developed directly by the individual ECAs; others would require the respective ECA guardian authorities to collectively change relevant international agreements, including the OECD Arrangement on export credit finance.

Investors respond well to various types of **credit enhancement**. Guarantees offered by the development banks (MFIs) such as the IFC are especially

Table 6: Examples of MFI Partial Credit Guarantees

| Sovereign guarantee required | Sovereign guarantee unnecessary |
|-------------------------------------|--|
| IBRD Partial Credit Guarantee | IFC Partial Credit Guarantee |
| Asian Dev. Bank PCG (Public Sector) | IADB Credit Guarantee (Private Sector) |
| African Dev. Bank (Public Sector) | Asian Dev. Bank PCG (Private Sector) |
| ICIEC Bank Master Insurance | African Dev. Bank Enclave Projects |

attractive to lenders in emerging markets. The partial (political) risk guarantee²¹ (PRG) and partial credit guarantee²² (PCG) are designed to mitigate the risks of sovereign contractual obligations²³ or long-maturity loans that private lenders will not bear and/or are not equipped to evaluate in developing countries.

An increasing number of PCG deals are done to facilitate local currency financing, which is an effective means of managing currency risk as well as raising funds. However, with the exception of the IFC (and MIGA), most MFIs have maintained a reactive approach to implementing the available guarantee instruments²⁴. Although not RE-specific, wider application of MFI credit enhancement products to facilitate transactions could only be helpful.

A distinction needs to be drawn between the various guarantees offered based on whether or not the issuing MFI requires a **sovereign counter-guarantee** for the loan (or bond). MFI products that require a sovereign counter-guarantee are of little practical use to most RE project developers. Table 6 lists some PCGs which require sovereign guarantees and some that do not.

Small-scale and flexible partial credit guarantees have proven very effective in mobilizing finance for a variety of transactions. The IFC is an active sponsor of PCGs for financial sector deals in transition economies. There is certainly potential for these instruments to facilitate a greater number of bankable renewable energy projects.

²¹ Partial (political) risk guarantees covers creditors for specified sovereign risks arising from a government's default on contractual obligations, or the occurrence of certain *force majeure* events of a 'political' nature.

²² A partial credit guarantee covers creditors irrespective of the cause of default up to an agreed capped amount – for example, 40 per cent of the initial principal, or one year of debt service.

²³ Sovereign contractual obligations typically include: maintaining an agreed regulatory framework, including tariff formulas; delivering inputs, such as fuel, to a private power company; paying for outputs, such as power or water purchased by a government utility; compensating for project delays caused by political actions or events.

²⁴ For instance, guarantees only account for about 1 per cent of the World Bank Group's total loan exposure and this seems quite low given the products' usefulness.

003917

Whilst not strictly financial risk management instruments there are a number of wider credit enhancement and **contingent financing** mechanisms offered by the GEF including contingent grants, performance grants, contingent or concessional loans, partial credit guarantees, investment funds and reserve funds. GEF contingent finance instruments are useful when there is substantial uncertainty about the existence and extent of incremental costs, characteristics not unusual in RE projects. The presence of GEF funds in a deal provides comfort to other lenders and thus leverages additional commercial finance.

GEF resources are limited and the institution has a broad mandate. The interests of GEF as an institution are best served by introducing programmes that are taken up and commercialized by the private sector. As a result, it is proposed that a budget be devoted to developing new risk management products and supporting new insurance capacity as discussed in section 6. The intended results of such pilot programmes would be replicable financial risk management templates that could be applied more cost efficiently across the RE sector. This barrier removal activity is consistent with GEF's charter and could prove effective at attracting private sector investment over the long term.

6. Scope for developing new financial risk management instruments for the RE sector

Scope for new product development

The objective of this study is to accelerate plans to develop product blueprints for actual application in the market and to move forward the current institutional operating framework that is hindering progress in RET uptake. However, given the limited financial resources available from the public sector to assist this process, it is necessary to qualify and quantify the objectives. How and where can this study direct limited public resources to the greatest advantage for the RE sector?

Least developed countries

It is important to recognize the differences in markets for RET in least developed countries compared with the developed world. Roughly 400 million households in the world's poorest countries do not currently have access to electricity. Historically, affordability of rural energy has been addressed through government subsidies, donor programmes and private cash sales or small systems. However, donations without any cost recovery destroy markets as consumers come to expect donor aid and will wait rather than pay market prices. Donors continue to undermine LDC market development with capital cost subsidies and donated equipment.

Scale is a particular problem in least developed countries, because the economies are so small, and wealth levels are low. The needs of local communities are often mismatched with the relatively high level of technology inherent in Western RETs. For example the evolution of wind turbine technology means that current monopiles are too large for many local infrastructures to manage, and small-scale installations are not economic projects for international financiers. Considerable amounts of capacity-building are needed as well as a much more local/regional approach for RET that differs from the broader objectives of this scoping study.

Carbon finance

The World Bank Prototype Carbon Fund's experience has shown that carbon finance²⁵ can materially improve the return on climate-friendly investments including certain RE projects. Methane capture from landfills and combustion to generate energy offer the greatest returns and opportunities for carbon financing. At prices currently paid by the PCF, carbon revenues from a typical landfill gas to energy project, for example, can contribute about USD15 per

²⁵ Carbon finance is a means of leveraging new private and public investment into projects that reduce greenhouse gas emissions, thereby mitigating climate change and promoting sustainable development.

megawatt hour, potentially increasing project internal rates of return by five percentage points or more.

To date, however, too few projects have attracted carbon finance for it to be of wide commercial interest. The difficulties of obtaining carbon finance and determining the forward price of traded permits predicate the difficulties in developing risk management instruments that will, for example, guarantee a future value of emissions reductions. The regulatory and other issues that have thus far inhibited the wider development of the carbon finance market are too complex to be usefully addressed here. However, Marsh and other leading players are ready to offer insurance products relating to permit delivery when the legal and policy frameworks are better established.

Commercial instruments in developed (and some transition) economies

As a result of the above considerations, and due to the particular expertise of the consultants involved, this scoping study focuses on some specific instruments that can be designed and applied in a commercial context in the current operating environment. Empirical evidence from both the RE community and financiers suggests that it is typically boutique companies (whether consulting or corporate finance, etc.) that interact with smaller-scale developers and, to some extent, with the RE sector in general. These boutiques are useful sources of certain types of expertise but are too small and too poorly capitalized to influence broader investment trends. A number of large financial institutions with the potential to help shape policy are engaging with governments on emissions reductions, energy security and development issues. However, because of their size, these same institutions are not able to respond properly to the current needs of the RE sector.

There is a gap in the private sector renewable energy ‘financing spectrum’ in developed markets. While small-scale RE developers and undercapitalized boutiques tend to interact at one end of the spectrum, large financial institutions with good intentions for RE projects but little practical room to manoeuvre commercially are interacting with policy makers at the other end of the same spectrum. This is especially evident in London, arguably the world’s premier financial centre. As a result, a large amount of RE-related business of all types simply does not get done. There is a useful potential role for the public sector to act as a ‘mezzanine player’ or bridge between the expertise, creativity and nimbleness of boutiques and the distribution networks, balance sheet and market influence of major financial institutions.

As a result of this study, the authors believe that material improvements in the current picture for renewable energy finance can be best addressed by tripartite approaches that draw upon the strengths of both boutique players and large institutions assisted by the public sector. Some product development suggestions below reflect this view.

Demand issues

There is no shortage of demand for solutions to underlying LDC risks but no new risk management products will resolve their social, economic and infrastructure challenges. Likewise, there is great demand for any product that can offer certainty in the realm of carbon finance but obviously there is no supply of such products because of the associated regulatory risk. So, given limited public resources, where is the greatest addressable demand for new products? And what potentially useful new products can be most efficiently created using the tripartite approach introduced above?

New approaches in Europe

With the advent of the new EU legislation on emissions trading, energy efficiency and wider environmental issues (as well as soaring crude oil prices), there is probably greater interest in Europe than elsewhere in as yet uninsurable RE technologies. Barrier removal that will increase the uptake of desirable technologies is an EU objective. The interest in new technologies can be translated into demand by stimulating the insurance community to create new products that can be used by the banking community as a platform for finance. One way of moving forward could be to operate a typical EU-style tender where entrants can compete for sponsored engineering studies to test their currently uninsurable but promising renewable energy technologies. The resulting data could be disseminated to underwriting and lending 'teams' that combine the creativity and speed of boutiques with the distribution networks and balance sheets of the larger players. A combination of carrot (potential new business) and stick (environmental fines and penalties) policy instruments along with the availability of indemnity cover for attractive technologies would create demand.

Expertise and markets

Strong natural demand exists for standard insurance cover but providing it can be complicated. Some of the instruments described in this text are years away from application in developing countries. For better or worse, most trend-setting financial products and approaches tend to be introduced in the City of London or on Wall Street, where relationships with the MFIs are fairly weak, and where the RE sector in general is poorly understood. That said, there is a willingness in the financial community to push forward 'good' (in appearance or substance) projects and so it is a reasonably auspicious time for new joint-venture product development initiatives.

Current demand for expensive ART solutions is negligible in the context of individual RE projects. Conversely, there is interesting potential for these more complex structures to aggregate smaller projects for risk finance/transfer purposes. Additionally, instruments such as Insurance CDOs can introduce fresh capacity to niche markets. Boutique operators are often better able/more willing to serve the existing addressable demand for SME-type risk management services to the RE sector than the major players in finance and insurance. In

time, and as economies of scale improve, some of these very companies are likely to be absorbed by the major players and their expertise/experience then delivered to a wider commercial field. In general terms, demand for RE-specific risk management products appears inelastic and should continue to grow as capacity becomes available.

A learning-by-doing approach to new product development

A **learning-by-doing** approach to developing new and commercially acceptable RE financing and risk management products should be adopted through focused interactions between the public sector, specialist financial boutiques and insurers, and several multinational financial intermediaries. Rather than financing individual projects, the goal of these exercises would be to design and then scale up the size of RE-related financing and risk management instruments. This can be accomplished through partnerships that combine the support, balance sheet and credit rating of public sector entities with the creative vision of specialist private boutiques and distribution networks of large companies.

The objective of this approach is to send creativity and responsiveness up the RE financing spectrum in major financial centres, while sending capacity, credit strength and distribution networks back down. The public sector assistance would function as a 'mezzanine facilitator' between the two. In this way, existing demand for smaller-scale risk management structures can be satisfied, while concurrently building critical mass for later-stage, large scale commercial deployment of RET. The deliverable result of the initial exercise should be product blueprints with an action plan for implementing a pilot programme.

The success of any resultant prototype RE-specific financing and risk management vehicles may be initially dependent upon credit enhancement or other support from multi- or bi-lateral agencies. The main risks to manage are technological and political risks. Naturally, the objective of any pilot programme would be to transit the current asset class of RE projects into the mainstream.

Initial studies of product architecture and the organization of some pilot programmes could be coordinated and managed by a public organization. Deal origination, credit enhancement and distribution will require the additional sponsorship of a regulated entity with a substantial balance sheet. As discussed above, such joint ventures ideally need three parties; a regulated boutique mandated to supply creative vision and develop product and service strategies, a public sector agent as mediator and sponsor, and additionally a large private bank, broker or (re)insurer with a solid distribution network. While these shareholder-driven institutions will not want to shoulder initial research and development costs for RE-targeted products, some would be willing to participate in marketing and distribution of investments and insurance products that have already been developed in conjunction with niche operators and assisted by relevant public support.

A learning-by-doing approach to developing new and commercially acceptable RE financing and risk management products should be adopted through focused interactions between the public sector, specialist financial boutiques and insurers, and several multinational financial intermediaries.

Special Purpose Underwriting Vehicles

'Special Purpose Underwriting Vehicles' (SPUVs) are discussed in some detail in the main document and could be useful in overcoming some of the more persistent barriers to RET uptake. For instance, even when scale is not an issue, RE project sponsors often find there is simply a lack of available indemnity cover. The sector could benefit from a pilot project that introduces blueprints for new specialist underwriting facilities that can provide needed insurance cover to RE projects. As a first step, it is proposed that a study be launched into the potential of risk finance vehicles, ART mechanisms and specialist Lloyd's syndicates in the creation of fresh platforms/SPUVs for managing the risks associated with constructing and operating RE projects.

There are a number of structures of varying complexity that can create a standard excess of loss (XOL) platform using a limited amount of public sector support – perhaps in the form of a contingent capital/credit line. As such structures develop loss histories, the resultant data will become a critical asset for actuarial modelling. This data would be the foundation for the subsequent commercialization of similar deals that could ideally be done without any further public sector support. Where practical, it makes sense to adapt existing products and structures that are already serving other sectors.

One useful example of a planned SPUV comes from the forestry sector. The London start-up ForestRe (FRe) is setting up as a specialist Lloyd's syndicate and will immediately benefit from Lloyd's investment grade credit rating (A-) and 65 worldwide operating licenses. The core business will be providing global fire/wind cover to small/medium sized forestry operations that are not currently served by the market. FRe will reward operations with sustainable management practices by reducing premiums. Once sufficient capacity has been reached, a good portfolio spread achieved and profitable operating history established, the firm intends to develop specialist lines for environmental markets that may include energy crop yield cover and carbon sink guarantees. FRe intends to pursue public-private interactions as part of its longer-term business development plan. If successful, FRe can offer a model to the RE sector.

Providing simple forestry fire/wind cover does not generally require public assistance. However, technology issues mean that providing RE project cover is comparatively complex and expensive. There may be scope to set up a viable wind power syndicate with an objective of serving smaller accounts and developing markets (indeed, the only mono-line syndicate currently operating on the Lloyd's market specializes in nuclear power). Depending on the commercial viability of the underlying RE technology, public sector support for specialist SPUVs can be limited to the payment of certain professional fees or other market development activities rather than the extension of risk capital. However, any RE technologies that are currently 'uninsurable' will still require extensive further engineering studies before a SPUV solution is considered. It is

proposed that some work be devoted to examining the potential of SPUVs in greater detail and that potential product blueprints with associated business development plans be the resultant deliverables.

Other programmes

This study identified a number of research areas, initiatives, and market practices that can further the uptake of renewable energy technologies into the broader commercial realm. Some of these include:

1. **A study of the boundaries of insurability with respect to RET.** The delimitations of prototypical and resource risk need to be further explored to facilitate the development of new risk finance/transfer products as suggested in the study.
2. **A (transparent and publicly funded) study of current RE project risk rating methodologies with the objective of disseminating information to create some initial rating templates for use in the RE sector.** The market needs reproducible and relatively transparent techniques to assess the risk/return profiles of proposed new investments and transactions, and thus to help set the pricing and terms and conditions of insurance cover. With generic tools supplied by public sector studies, underwriters could accelerate their implementation of a commercial rating methodology to set appropriate terms and conditions and enable a rational and stable pricing structure to emerge for RE projects. The initial study could focus on biomass as this is a technology area where substantial rationalization of ratings is possible.
3. **A study of existing Public – Private Sector interactions focusing on how any relevant arrangements can be adapted to the benefit of the RE sector.**
4. **A review of potential tripartite joint venture groups (boutiques + public sector agents + large financial sector groups) for product development pilot programmes as suggested in this study.**
5. **A review of the potential role of public-private partnerships with Official Bilateral Insurers (OBIs – typically Export Credit Agencies).** The mandates of many OBIs are coming under strain because their governments forbid them to provide NCRI cover where private insurers are willing to take the risk. Hence, OBIs suffer poor results as ‘insurers of last resort’ but are asked to break even at the same time. This situation is unsustainable. If OBIs are to remain solvent they will need a balanced spread of risk in their portfolios and could benefit from the introduction of new products to promote the RE sector that are designed in conjunction with the private sector.
6. **A detailed review of current and potential credit enhancement instruments that can be adapted for use in the RE sector.**
7. **Product development studies that focus on ‘bundling’ small projects using existing re/insurance, ART and capital markets products.**
8. **Adoption of more holistic valuation methodologies for RE projects and technologies.** Most of the value inherent in RET is difficult to quantify

because forecasts often depend on particularly uncertain variables. Real Option Analysis improves upon standard valuation techniques for RE projects by better quantifying the potential upside investment value of RE-associated revenue streams.

Barrier removal priorities

Several barrier removal priorities need ongoing consideration.

1. Small scale of RE projects versus high transaction costs is a fundamental barrier to the commercial development of the sector. RE projects could benefit from cheaper and simpler risk management templates that are portable and replicable and can be adapted to individual parameters.
2. Uncertainty around policy has been identified by most financiers as the key barrier to commercial development of RET in countries where specific policy support measures are in place. Whilst it is necessary to have some official support measures for renewable energy (acknowledging that no one approach will be equally relevant in all regulatory environments) the critical issue for investors is the need to demonstrate long-term support and stability of approach. Rational and long-term policy interventions are needed to provide a more enabling environment for financing desirable new technologies.
3. The existing rigid, fragmented and inflexible underwriting methodologies within the private and public sector insurance markets inhibit the financing of RE projects. New underwriting approaches and methodologies are called for. Where it is practical, existing energy-related insurance lines that cover similar operations or similar risks faced by RE projects can be adapted and extended. The ongoing convergence of the insurance and capital markets is opening up some new conceptual possibilities for raising capital and managing risk in the RE sector. Initial sponsorship/co-financing from the public sector will probably be required to 'test-drive' and publicize new products in the open market.
4. At present, the market does not have sufficient information to appropriately determine the performance, delivery and asset quality risks associated with RE projects. The lack of actuarial data and the inability to accurately quantify RET risks demands the commercial integration of new risk modelling and assessment techniques that can function with limited data points.
5. A more structured and systematic 'implementation' framework is required to help advance product development for renewable energy finance. The main document discusses the resources available to GEF implementing agencies such as UNEP and considers how these can be well targeted to various RET applications²⁶. However, several key underlying institutional operating constraints need to be overcome to improve the commercialization of products and market acceptance of public sector engagement.

²⁶ The GEF is currently in the 'GEF-3' period (FY03-06) and the total resources available during this period are USD3 billion. The main document discusses the resources available for projects.

Concluding summary

This report is intended for use as a scoping study to identify promising areas for future research, and also as an initial outline for possible product development strategies. The *learning-by-doing* approach is identified as an efficient means of making forward progress. Such an approach requires both strategic vision and low overheads to be successful. In the financial sector, it is argued that institutional inertia currently precludes the development of meaningful new risk management or financing products designed to leverage private capital flows to the RE sector.

Innovation in many market sectors is spawned by niche operators and small businesses that are later absorbed by larger players and thus new ideas are moved into the mainstream. However, financial sector participants require substantial amounts of capital to meet regulatory requirements, let alone acquire an investment grade credit rating that will be attractive to prospective institutional investors. Acquiring this capital is expensive and returns must be justified by quarterly performance reports to the shareholders.

In this sensitive operating environment there is little incentive to finance and insure projects that are perceived as high-risk and low-margin. At the same time, it is the large financial institutions that set investment trends by widely distributing products and ideas. These institutions also negotiate with governments, NGOs and other corporations and, for better or worse, help determine policy. Both niche operators and large institutions are needed to break the current product development impasse in the RE sector. There is a role for the public sector as a catalyst and third partner to mentor/mediate any team initiatives and provide assistance as appropriate.

Both niche operators and large institutions are needed to break the current product development impasse in the RE sector. There is a role for the public sector as a catalyst and third partner to mentor/mediate any team initiatives and provide assistance as appropriate.

7. Bibliography

Brown, M. December 1996. *Renewable Energy Projects: A Decade of Lessons for Financial Institutions*. National Conference of State Legislatures. USA.

Clini *et al.* 2001. The G8 Renewable Energy Taskforce, Conference Material.

Culp, Christopher. 2002. *The ART of Risk Management: Alternative Risk Transfer, Capital Structure and the Convergence of Insurance and Capital Markets*. John Wiley & Sons, Inc. New York.

Dixit, A. & Pindyck, R. 1994. *Investment Under Uncertainty*. Princeton University Press. Princeton, NJ.

Dailami, M., & Hauswald. 2003. *The Emerging Project Bond Market: Covenant Provisions and Credit Spreads*. World Bank Policy Research Working Paper #3095. Washington D.C.

Froot, K. A., Scharfstein, D. S. & Stein, J. C. November/December 1994. A Framework for Risk Management. *Harvard Business Review*, pp. 91-102.

Gerrard, M. B. September 2001. 'Public-Private Partnerships'. *Finance & Development*, Vol. 38, No. 3. IMF, Washington D.C.

Hainz, C. & Kleimeier, S. June 2003. *Political Risk in Syndicated Lending: Theory and Empirical Evidence Regarding the Use of Project Finance*. Limburg Institute of Financial Economics, LIFE Working Paper No. 03-014.

Institute of Development Studies, University of Sussex. 2000. *A Foresight and Policy Study of Multilateral Development Banks*. Prepared for the Ministry of Foreign Affairs, Sweden.

Imperial College Centre for Energy Policy and Technology. November 2003. *Assessment of Technology Options to Address Climate Change*. A Report for the Prime Ministers Strategy Unit.

Kohler, D. *Integrating Global Environmental Concerns into Insurance Sector Business Products*. A Draft GEF PDF – A study.

003917

Marsh Ltd. September 2003. *Risk Assessment Workshop Report: DTI Climate Change Projects Office*. London, UK.

Mishra D., Mody A. and Murshid A.P. June 2001. 'Private Capital Flows & Growth?' *Finance & Development*, Vol. 38, No.2. IMF, Washington D.C.

Mistry, Percy & Olesen, Niels. 2003:1. *Mitigating Risks for Foreign Investments in Least Developed Countries*. Executive Summary. Ministry for Foreign Affairs, Stockholm, Sweden.

Olivier, Edmund. November 2003. *Survey of Contingent Financing & Risk Mitigation Instruments for Clean Infrastructure Projects*. World Bank Group (conference paper). Washington, D.C.

Paschen, H. February 2003. *Possibilities For Geothermal Electricity Generation In Germany*. Office of Technology Assessment at the German Bundestag. Summary of Working Report No. 84.

Pfeffermann, Guy. 2000. *Paths Out of Poverty: The Role of Private Enterprise in Developing Countries*. IFC, Washington, D.C.

Jones, J., *Renewable Energy World*. Vol. 6 No. 3. May-June 2003.

Skytte, K., *et al.* 2003. *Challenges for Investment in Electricity in the European Union*. Background report in the ADMIRE REBUS project.

Sonntag-O'Brien, Usher, E. June 2004. *Mobilising Finance for Renewable Energies*. Thematic Background Paper 5: Financing Renewable Energies. Draft Paper for Preparation of the International Conference for Renewable Energies, Bonn.

Temperton, I. September 2003. *Financing Wind Beyond 2010*. BWEA report.

Press Releases

Launch of the Pelamis Offshore Wave Energy Converter. Ocean Power Delivery Ltd. www.oceanpd.com

Breakthrough for Geothermal Energy: First Insurance for Geological Risk Relating to Geothermal Drilling. Rodl & Partner. www.roedl.com

About the UNEP Division of Technology, Industry and Economics

The mission of the UNEP Division of Technology, Industry and Economics is to help decision makers in government, local authorities, and industry develop and adopt policies and practices that:

- are cleaner and safer;
- make efficient use of natural resources;
- ensure adequate management of chemicals;
- incorporate environmental costs; and
- reduce pollution and risks for humans and the environment.

The UNEP Division of Technology, Industry and Economics (UNEP DTIE), with the Division Office in Paris, is composed of one centre and five branches:

- **The International Environmental Technology Centre (Osaka)**, which promotes the adoption and use of environmentally sound technologies with a focus on the environmental management of cities and freshwater basins, in developing countries and countries in transition.
- **Production and Consumption (Paris)**, which fosters the development of cleaner and safer production and consumption patterns that lead to increased efficiency in the use of natural resources and reductions in pollution.
- **Chemicals (Geneva)**, which promotes sustainable development by catalysing global actions and building national capacities for the sound management of chemicals and the improvement of chemical safety worldwide, with a priority on Persistent Organic Pollutants (POPs) and Prior Informed Consent (PIC, jointly with FAO).
- **Energy and OzonAction (Paris)**, which supports the phase out of ozone depleting substances in developing countries and countries with economies in transition, and promotes good management practices and use of energy, with a focus on atmospheric impacts. The UNEP/RISØ Collaborating Centre on Energy and Environment supports the work of the Unit.
- **Economics and Trade (Geneva)**, which promotes the use and application of assessment and incentive tools for environmental policy and helps improve the understanding of linkages between trade and environment and the role of financial institutions in promoting sustainable development.
- **Coordination of Regional Activities Branch**, which coordinates regional delivery of UNEP DTIE's activities and ensures coordination of DTIE's activities funded by the Global Environment Facility (GEF).

UNEP DTIE activities focus on raising awareness, improving the transfer of information, building capacity, fostering technology cooperation, partnerships and transfer, improving understanding of environmental impacts of trade issues, promoting integration of environmental considerations into economic policies, and catalysing global chemical safety.

For more information contact:

UNEP, Division of Technology, Industry and Economics
39-43, Quai André Citroën
75739 Paris Cedex 15, France
Tel: +33 1 44 37 14 50 Fax: +33 1 44 37 14 74
E-mail: unep.tie@unep.fr
Website: www.uneptie.org

www.unep.org

United Nations Environment Programme
P. O. Box 30552, Nairobi, Kenya
Tel: (254 2) 621234
Fax: (254 2) 623927
E-mail: epiinfo@unep.org
web: www.unep.org



www.sefi.unep.org

Sustainable Energy Finance Initiative
Tel: +33 1 44 37 14 50
Fax: +33 1 44 37 14 74
E-mail: sefi@unep.fr
Website: www.uneptie.org



Division of Technology, Industry and Economics
Tour Mirabeau
39-43 quai André Citroën
75739 Paris Cedex 15
France
Tel: +33 1 44 37 14 50
Fax: +33 1 44 37 14 74

Wind Energy Money Changing & Wealth Transfers

Glenn R. Schleede

003917

July 12, 2003

Letter to Tim MacDonald from Glenn Schleede

The magnitude and merits of energy tax breaks and subsidies

Table: U.S. Energy Consumption by Energy Source: 2000 Actual and EIA Forecast for 2025

The implications of your activities

Adequacy of your research

True cost of electricity from wind energy

Endnotes

Attachment: Letter to Glenn Schleede from Tim MacDonald

Mr. Tim MacDonald
Senior Vice President
Meridian Clean Fuels, LLC
1266 Furnace Brook Parkway
Quincy, MA 02169

Dear Mr. MacDonald:

Thank you for your July 2, 2003, letter (copy attached):

- Indicating that Meridian is in the business of brokering Section 29 and 45 tax credits, with plans to focus on the extensive tax credits available for wind energy, and
- **Asking that I help you understand the reasons why wind energy does not really have all the advantages that its supporters claim.**

In summary, I do not propose to help you because I believe:

- Your letter is evidence that you have not done the objective research that would, if undertaken, reveal the answers you are asking me to provide.
- **Federal tax credits available under Sections 29 and 45 of the Internal Revenue Code often:**
 - **Encourage investments in projects that are undertaken for tax avoidance purposes rather than sound business reasons.**
 - Distort private sector capital investments by directing capital to projects with little intrinsic merit.
 - Shift tax burden from highly profitable organizations to ordinary individuals.

- Encourage investments in projects that help push up consumers' electricity prices.
- **Result in damage to environmental, ecological, scenic and property values that has not been taken into account by lawmakers and regulators.**
- Are not in the national and public interest, despite the fact that they may be legal.

Based on your letter, it appears that Meridian plans to serve as a “money changer” by using faulty federal and state tax law and tax policies for wind energy to aid in transferring wealth (hundreds of \$ millions) from ordinary taxpayers and consumers to organizations with high profits that wish to avoid taxes.

Such a role probably is quite legal. Whether helping to load more tax burden and high (regressive) electricity costs on ordinary citizens is morally acceptable is a separate consideration. **My sympathies in this matter lie with the taxpayers, electric customers and citizens who would bear the economic burden as well as the cost of impaired environmental, ecological, scenic and property values resulting from “wind farms.”**

The magnitude and merits of energy tax breaks and subsidies

Normally, I would be quite willing to help keep tax dollars from flowing to Washington where they are wasted with such abandon -- as illustrated by the hundreds of millions of tax dollars that flow through the US Department of Energy (DOE) each year. As you probably know, DOE and its predecessors have spent over \$100 billion on “energy R&D” that has produced little that is technologically sound, economically competitive and environmentally acceptable.

For example, DOE has spent hundreds of millions on wind energy R&D, often using the argument that this was an “investment” in technology that would give the US an advantage in world markets. However, some 90% of the wind turbine market is supplied by foreign companies. The dollars being spent for wind turbines imported for “wind farms” in the US are, like dollars for imported oil, a part of the US balance of payments deficit.

My normal desire to keep tax dollars out of Washington does not extend to either:

1. Unwarranted Section 29 and 45 tax credits which, demonstrably, are among the more wasteful and outrageous measures pushed through the Congress by various special interest groups. For example, you may be aware that Section 29 tax credits for coalbed methane at times exceeded the wellhead market price for natural gas. Also, the abusive use of “synfuels” tax credits is nearly legendary. The recent Wall Street Journal story indicating that the US Treasury Department is finally preparing to clamp down on this abusive tax credits is a welcome sign.
2. **“Windfall” tax breaks and subsidies now being captured by the wind energy industry at the expense of the nation’s electric customers and taxpayers. Contrary to the claims by wind energy advocates, wind energy may now be THE most heavily subsidized energy source WHEN CONSIDERED IN LIGHT OF EITHER ITS CURRENT OR PROSPECTIVE CONTRIBUTION TOWARD SUPPLYING THE**

NATION'S ENERGY REQUIREMENTS.

008817

Many federal, state and local tax breaks and subsidies (some from regulators) are now available for commercial scale windmills even though the huge machines produce very little electricity. The list includes:

- a. **Federal five-year double-declining balance accelerated depreciation (MACRS^[1])** which, with the recently enacted depreciation “bonus,” permits “wind farm” owners to deduct 60% of the capital cost^[2] of a “wind farm” from otherwise taxable income in the 1st tax year, another 16% in the 2nd tax year, and the remainder over the next 36 – 48 months.
- b. A ten-year, \$0.018 per kilowatt-hour (kWh) **Production Tax Credit** which permits the owners of “wind farms” or their parent companies to deduct additional millions of dollars each year from their tax liability.
- c. **Depreciation deductions from income that would otherwise be subject to state corporate income tax in states that conform their corporate taxes to the federal income tax system.**
- d. Dozens of state and local government tax breaks, enacted in response to wind industry lobbyists, including (depending on the state) state production tax credits, reductions in or exemptions from business and occupation taxes, sales and use taxes, and state and local property taxes. Some reductions in the 85% to 95% range.
- e. Direct DOE subsidies (via contracts, grants and subcontracts) for wind energy R&D and for wind promotional activities carried out by DOE “national laboratories,” trade associations and numerous “non-government organizations” that have been created to promote expensive “renewable” energy.
- f. Similar state subsidies (e.g., in New York), which are provided to “wind farm” developers from funds collected from electric customers via so-called “public benefit funds.”
- g. **“Renewable Portfolio Standards,” (RPS), enacted in several states (and proposed as a federal measure), which shift additional costs to electric customers.** This insidious subsidy forces electric distribution companies to purchase high cost electricity from “renewable” energy companies and pass energy and administrative costs not recovered through “green” programs on to all electric customers.
- h. “Green” energy programs that are forced on electric distribution companies to provide a market for high cost renewable energy.
- i. Mandated or voluntary “green” energy purchases by federal, state and local government agencies and schools, with the higher cost of renewable energy borne by taxpayers.
- j. Costs of building electric transmission capacity to serve “wind farms,” with costs shifted by regulators from the “wind farm” owners to electric customers.^[3] Examples include a \$148 million Xcel project in Minnesota and capacity additions in Texas.
- k. Arbitrarily awarded “capacity” credits for “wind farms” that exceed the true contribution that this intermittent, variable, and largely unpredictable source can provide.

My preliminary estimates indicated that tax breaks and subsidies for wind energy from the

first few items in the above list will easily exceed \$300 million in 2002 and will be higher in the years ahead.

The wind industry's claims that it does not get its fair share of government subsidies should be considered in light of the small contribution that wind is expected to contribute in supplying US energy requirements. This small contribution (despite the enormous growth in subsidies) can be seen in the following table that is based on the Energy Information Administration's (EIA) Annual Energy Outlook 2003.

U.S. Energy Consumption by Energy Source: 2000 Actual and EIA Forecast for 2025

| Energy Source | Actual 2000 | | EIA Forecast for 2025 | |
|-------------------------------------|-----------------|------------|-----------------------|------------|
| | Quadrillion Btu | % of Total | Quadrillion Btu | % of Total |
| <u>Traditional Sources</u> | | | | |
| Petroleum products | 38.39 | 38.60% | 56.22 | 40.40% |
| Natural Gas | 24.07 | 24.20% | 35.81 | 25.73% |
| Coal | 22.64 | 22.76% | 29.42 | 21.14% |
| Nuclear Power | 7.87 | 7.91% | 8.43 | 6.06% |
| Conventional Hydropower | 2.84 | 2.86% | 3.12 | 2.24% |
| Other | .31 | .31% | .07 | 0.05% |
| Sub-Total – Traditional | 96.12 | 96.64% | 133.07 | 95.62% |
| <u>Non-Hydro Renewables</u> | | | | |
| Geothermal | 0.30 | 0.30% | 1.02 | 0.73% |
| Wood | 0.41 | 0.41% | 0.40 | 0.29% |
| Other Biomass | 2.07 | 2.08% | 3.42 | 2.46% |
| Municipal Solid Waste | 0.31 | 0.31% | 0.44 | 0.32% |
| Solar Thermal, electric & hot water | 0.06 | 0.06% | 0.09 | 0.06% |
| Solar Photovoltaic | 0.00 | 0.00% | 0.01 | 0.01% |
| Ethanol | 0.14 | 0.14% | 0.34 | 0.24% |
| Wind | 0.05 | 0.05% | 0.37 | 0.27% |
| Sub Total – Non-Hydro renew. | 3.34 | 3.36% | 6.09 | 4.38% |
| Total | 99.46 | 100% | 139.16 | 100% |

As the table shows, fossil energy sources (petroleum, natural gas and coal, combined) are expected to supply 87.27% of US energy requirements in 2025 – or 323 times the 27/100 of 1% expected from wind. If wind subsidies totaled \$300,000,000 in 2002, the industry's "fair share" argument would suggest that subsidies for fossil energy sources should be at least \$96,900,000,000! Clearly, the wind industry's claim is without merit.

The implications of your activities

Please consider seriously the fact that subsidies for wind energy are shifting hundreds of millions of dollars in cost from "wind farm" owners and placing it on the backs of ordinary taxpayers and electric customers – with

this extra burden then hidden in tax bills and monthly electric bills. Does Meridian really want to participate in, encourage and profit from this activity?

Please note also the point that subsidies distort investments by directing capital toward endeavors that often have little long-term value. The federal and state governments are repeating a mistake made during the 1980s when tax credits were the motivation for building thousands of windmills in California which produce little electricity. Many were abandoned once tax benefits were exploited – resulting in California’s “windmill junkyards.”

Finally, please note that the high front-end tax benefits for wind energy provides an incentive for (a) similar abandonment of today’s “wind farms” once tax benefits have been captured,¹⁴ and/or (b) “churning” of “wind farm” ownership to permit successive owners to take advantage of lucrative accelerated depreciation benefits.

Adequacy of your research.

I have some doubt whether your research has been as thorough as you suggest. Your questions suggest that you have focused primarily on promotional information from the wind industry, DOE, the National Renewable Energy Laboratory (NREL), and various wind energy advocacy groups – none of which can be relied on for objectivity. You should have found answers to most of your questions if your research had extended to such sources as the following:

The growing number of articles in the general press on opposition to proposed “wind farms.”

Open literature and web sites that include analyses and commentary from individuals and organizations that are not biased in favor of wind energy.

Web sites sponsored by organizations that actively oppose wind energy because of its adverse impacts on environmental, ecological, scenic and/or property values, and sites that encourage discussion of the issues that are involved. Such sites exist in the US, UK, Denmark, Germany, Spain, Italy, Australia and probably other nations.

Numerous papers that I have written and distributed.

True cost of electricity from wind energy

While not important to your plan to capitalize on faulty government tax policies, you may want to note that most claims about the per kWh cost of electricity from wind turbines are without a solid foundation and are often understated. For example:

Often, those calculations are based on assumed turbine (and related windmill components) lifetime of 20 years and assumptions about O&M, repair and replacement costs. In fact, no one has experience with today's generation of wind turbines over a long enough period to demonstrate the validity of those assumptions.

The claimed per kWh costs often ignore the fact that the generous subsidies for wind energy described above shift large portions of the true cost from "wind farm" owners and hide them in bills paid by ordinary taxpayers and electric customers.

The claimed per kWh costs generally do not include the true cost of backup generation, integration of electricity from intermittent wind generation into electric grids, or transmitting electricity from "wind farms" to areas where the electricity can be used. I hope that the above information will explain adequately why I do not wish to provide the help for Meridian's venture that you requested in your letter (attached). In summary, like the tax benefits you wish to exploit, I do not believe that your venture would make a positive contribution to the national or public interest.

Sincerely,

Glenn R. Schleede

PO Box 3875

Reston, VA 20195-1875

Phone: 703 709-2213

Email: EMPAInc@aol.com.

Attachment: Letter from Mr. Tim MacDonald, Senior VP, Meridian.

Endnotes:

^[1] MACRS = Modified Accelerated Cost Recovery System.

^[2] Whether financed with debt or equity.

³ In addition to the subsidy value of shifting transmission costs from "wind farms" to electric customers, note that "wind farms" tend to be inefficient users of transmission capacity. That is, transmission capacity

must be available to serve the full rated capacity of a "wind farm" but that capacity is likely to be utilized less than 30% of the time.

4 Note especially that most "wind farms" are owned
by single asset limited liability companies (LLCs)
that are wholly owned by relatively large companies
with substantial income from other activities that
they wish to shelter from federal and state taxes.

03017

Attachment: July 2, 2003 letter received via Email from Mr. Tim MacDonald of Meridian

Dear Mr. Schleede;

My name is Tim MacDonald. I am a Senior Vice President at Meridian Clean Fuels. We are an affiliate of Meridian Investments, Inc.

I have been researching the wind industry for some Meridian is the largest independent broker in the tax credit industry. Meridian Clean Fuels is a Meridian company that specializes in energy-related tax credit programs under Section 29 and 45 of the Internal Revenue Code. This includes Wind. months now, in an effort to understand all the complex policy and economic issues. I have found many sources advocating wind. Your name continues to surface as a major opponent of wind.

As Meridian gears up to begin representing the wind industry in the tax credit market, it is very important to us that we represent these investments fairly, but also accurately. We are very sensitive to any countervailing concerns that could adversely affect the long term viability of the Production Tax Credit program or the wind industry, generally.

Unless I have missed something, however, it appears that your objections to wind are based entirely on cost, arguing that wind is just more expensive than combustion technologies, and cannot compete on price. It is interesting that you do not appear to have addressed the one issue that seems to drive all the advocates for wind, and that is the environmental benefits from clean generation.

It would be of significant benefit to Meridian, if you would be willing to comment on the following assertions.

1. There is an environmental cost to combustion generation that is not reflected in the current market prices for electricity produced from fossil fuels.
2. Wind is clean generation, that has no environmental cost attached.
3. The incremental difference between the cost of clean generation from wind and the cost of polluting generation from combustion represents a useful and affordable measure of the environmental cost of combustion generation.
4. Any reduction in adverse environmental impact achieved at a national level is worth any incremental increase in the cost of generation, overall - although there are important unresolved

issues regarding the question of who should pay those incremental costs.

003027

5. The challenges presented by introducing intermittent wind generation into the existing transmission grid reflect an obsolete grid design that is the legacy of decisions made in the early days of the electric power industry, under very different circumstances. This legacy design is increasingly inadequate to today's power needs on many levels, with the adoption of clean generation being only one. The grid needs to be redesigned, anyway, so why not design a new grid that can handle as much clean generation from wind as we can harness, consistent with the competing goals of adequate supplies of electricity with no meaningful adverse environmental impact for the lowest possible cost.

Whatever time you are willing to invest in sharing your thoughts on these points will be much appreciated.

Sincerely,
Tim MacDonald
Senior Vice President
Meridian Clean Fuels, LLC
1266 Furnace Brook Parkway
Quincy, MA 02169
< www.meridianinvestments.com >.

Used with permission of the author.

003827

Wind Energy Developments

Edison Electric Institute Fall Legal Conference
Boston, Massachusetts
October 9, 2003

Carolyn S. Kaplan, Esquire
Ruth H. Silman, Esquire
Jessica A. Graf, Esquire

Nixon Peabody LLP
101 Federal Street
Boston, MA 02110
(617) 345-1000

www.nixonpeabody.com

NIXON PEABODY LLP

I. Renewable Energy – Wind Power

Renewable energy generally includes wind, solar, biomass, landfill gas, geothermal, ocean (wave/tidal) and small hydropower.¹ Wind power is often referred to as the world's fastest growing energy source. This paper focuses on the development of wind energy as an example of the growing renewable energy market.

A. Global Wind Power Developments

1. Wind is the world's fastest-growing renewable energy source on a percentage basis, with installed generating capacity increasing by an average 32% annually for the last five years (1998-2002).² Global (including the U.S.) wind power generating capacity has quadrupled over the past five years, growing from 7,600 MW at the end of 1997 to an estimated 31,128 MW at the end of 2002 – an increase of over 23,000 MW.³
2. A total of 5,871 MW – worth €5.8 billion (U.S. \$6.3 billion) – were installed in the E.U. countries in 2002. This represents an increase in capacity of 33% to 23,056 MW.⁴
 - a) Germany, Spain and Denmark accounted for 89% of the wind power capacity installed in Europe in 2002.⁵
 - b) Germany installed 3,247 MW of new wind power capacity in 2002 for a total installed capacity of 12,001 MW, enough to meet 4.7% of its electricity needs. Spain installed 1,493 MW of new wind capacity in 2002, to reach a total installed capacity of 4,830 MW. Denmark installed 497 MW to reach 2,880 MW, enough to meet 20% of its electricity needs.⁶

B. Growth of Wind Power in the U.S.

1. Installed Capacity
 - a) In the U.S., between 1998 and 2002, installed capacity grew from 1,848 MW to 4,685 MW, a compound growth rate of 26%.⁷ By the end of 2003, wind energy installations across the United States are expected to reach 6,000 MW and produce 15 to 17 billion kWh annually.⁸
 - b) Wind power development is occurring in many regions of the country. States in which large-scale wind power projects are operating or being developed include Alaska, Arizona, California, Colorado, Hawaii, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming. See Appendix for a map of installed and anticipated wind power capacity throughout the U.S. See Appendix for a table of U.S. projects completed, constructed or pending in 2003.
 - c) The growth rate over the past five years is expected to continue.⁹ Nevertheless, the wind industry's future beyond 2003 will be strongly influenced by whether

Congress once again extends the federal Production Tax Credit (PTC), scheduled to expire on December 31, 2003. (See the discussion in Section II(C)(2), below.) Significantly, U.S. wind development in 2002 reached only 410 MW in large part due to the expiration of the PTC at the end of 2001 and the delay in its reinstatement until March of 2002.¹⁰ This dramatic decrease in installations followed the addition of 1,700 MW of capacity in 2001 – indicating that the PTC plays a significant role in the development of wind power.¹¹

- d) Current installed wind capacity in the U.S. (4,685 MW) represents less than 1% of the country's total renewable source generating capacity.¹²

C. Benefits to Utilities

1. The addition of wind power generation to the energy mix can provide economic benefits to utilities. Wind power can:
 - a) Help hedge against volatile prices and uncertainties regarding availability of fossil fuels.
 - b) Be added in small increments, thus reducing the risk of excess capacity.
 - c) Provide generation capacity in geographic areas that are underserved by existing generation capacity.
 - d) Help utilities to meet state-mandated Renewable Portfolio Standards.
 - e) Offset costs associated with traditional fossil fuel generation (e.g., costs of complying with emission control requirements).
 - f) Provide an attractive product to customers who are seeking “green” power.¹³

D. Technological Advances and Decreasing Costs in Wind Power Generation

1. The costs of generating wind power have decreased by more than 80% in 20 years, from 30 cents/kWh in the early 1980s to less than 5 cents/kWh in 2002.¹⁴ See Appendix for graphic representation of decreasing costs of wind energy.
2. The largest wind turbine developed to date is a prototype 5-MW wind turbine introduced by REpower. The 5-MW turbine will have a rotor diameter of 126.5 meters (415 feet), making it the largest wind turbine in the world. It uses the longest wind turbine blade ever built, and will have a hub height of 120 meters (394 feet). The prototype will be constructed in Brunsbuettel, northwest of Hamburg, in 2004. Once it is successfully tested on land, the turbine's intended use will be offshore.¹⁵
3. Currently, utility-scale wind turbines can produce electricity for 4 cents/kWh on Class 6 wind sites (sites with average wind speeds of 6.7 meters per second at 10 meter height or 16 miles per hour at 33 feet). As more sites are developed, however, easily accessible prime Class 6 sites are disappearing. In addition, many Class 6 sites are located in remote areas that usually do not have ready access to transmission lines.¹⁶
4. Class 4 wind sites (5.8 meters per second at 10 meter height or 13 mph at 33 feet) cover vast areas of the Great Plains from central and northern Texas to the Canadian border. Class 4 sites are also found along many coastal areas and along the shores of the Great

Lakes. While the average distance of Class 6 sites from major load centers is 500 miles, Class 4 sites are significantly closer, with an average distance of 100 miles from load centers. Thus, access to the Class 4 sites is more attractive and less costly. Also, Class 4 sites represent almost 20 times the developable wind resource available at Class 6 sites. Currently wind energy at Class 4 sites can be marketed at prices in the range of 5-6 cents/kWh.¹⁷

5. The U.S. Department of Energy (DOE), the National Renewable Energy Laboratory (NREL), and other wind research organizations are focusing on developing, testing, and lowering the costs of turbine components that operate in lower wind speeds. The goal of the DOE's Low Wind Speed Turbines project is to reduce cost of energy from large wind systems to 3 cents/kWh in Class 6 wind resources by 2004, and to 3 cents/kWh in Class 4 wind resources by 2010.¹⁸

II. Legislative and Financial Incentives

A. General

1. As a general matter, legislative incentives for wind power include, but are not limited to, various state renewable portfolio standards, the federal Production Tax Credit, and a proposed federal renewable portfolio standard.¹⁹
2. Provided the state renewable portfolio standards continue, the American Wind Energy Association (AWEA) estimates that, by 2010, approximately 10% of electricity in the U.S. will come from renewable energy sources; to meet this requirement, billions of dollars of capital investment will be needed.²⁰ Potential sources of new capital include European wind developers, domestic energy companies, and institutional investors. The wind industry's challenge will be to attract the investment capital needed to achieve the projected level of market penetration. The two key economic drivers of wind derive from the federal Production Tax Credit and depreciation. These, in turn, create large equity requirements instead of debt. This is ideal for institutional investors; however, the problem to date has been matching project risks with investors' financial and accounting objectives. These issues are discussed in greater depth, below.

B. State Renewable Portfolio Standards

1. What is a Renewable Portfolio Standard and How Does It Work?
 - a) Renewable portfolio standards (RPS) generally require that any company selling electricity in a competitive market include renewable energy as a percentage of its portfolio of generating sources. In principle, an RPS is designed to be competitively neutral, in that it imposes the same obligation on any company selling electricity in the state.²¹
 - b) Renewable portfolio standards have been enacted primarily as a result of state-based electric restructuring efforts. Minnesota, Iowa and Wisconsin are the only states to mandate renewable energy generation without simultaneously restructuring their electric industries.²²
 - c) According to renewable power advocates, state RPS laws will provide for over 12,400 MW of new renewable power by 2012, an increase of more than 90% over total 1997 U.S. levels (excluding hydropower).²³

- d) In most states with an RPS, the RPS requirement is a tradable obligation; a system of tradable renewable energy credits (RECs) provides electricity generators with a flexible means for achieving renewable energy requirements. One REC is created for each unit of renewable electricity generated. Renewable energy generators earn RECs and then sell them to those who need them to meet the RPS requirements. This approach is similar to the allowance and credit trading programs established under the Clean Air Act. Connecticut, for instance, currently requires that 6.5% of a retail electricity sellers' portfolio of resources be from existing renewable energy resources. A retail supplier whose portfolio of resources is 10% renewable would be able to sell credits to another supplier with less than the 6.5% requirement.²⁴
- e) Electricity information tracking systems (like ISO New England's Generation Information System (GIS)) help to facilitate the development of renewable power markets and compliance with RPS regulations. Electricity information tracking systems can also be used to separate the renewable attributes from the energy commodity, thus creating two separate markets and enabling the liquid trading of attributes.
- f) RPS is thought to be one of the most important factors driving the development of new renewable energy sources in the United States over the next 10-15 years. RPS requirements vary widely from state to state.

2. Highlights of State RPS Nationwide

- a) How Do Various States Define Renewable Energy for Purposes of RPS?
 - (1) The majority of state RPS regulations define renewable energy to include wind, solar, biomass, landfill gas and geothermal. Some states include fuel cells, tidal, wave, ocean thermal, digester gas or methane recovery.
 - (2) Some states exclude hydropower because it is a more mature technology that already comprises approximately 10% of the nation's electricity supply, and existing hydropower facilities generally do not need the support of an RPS to continue operating. Others include existing or small hydropower facilities; for example, New Jersey allows hydropower to qualify provided it meets certain "high environmental standards." See Appendix for chart detailing state RPS requirements.

C. Federal Energy Bill

1. Renewable Energy Features and Status of Legislation

- a) On July 31, 2003, the Senate dropped consideration of the Republicans' energy policy bill (S. 14) and voted 84-14 to approve last year's proposed energy bill.²⁵ Among other provisions, the Senate bill would extend the Production Tax Credit (PTC) for three years through December 31, 2006; set a national RPS of 10% by the year 2020; and create a new Small Turbine Investment Credit of 30%, capped at \$2,000 per system.²⁶
- b) On April 11, 2003, the full House of Representatives passed a three-year extension of the wind energy PTC through December 31, 2006 as part of H.R. 6. The House energy bill contains no RPS.²⁷

- c) Energy conference leaders have suspended their work on the energy bill until the third week of October when the Senate returns from its fall recess.

2. Federal Production Tax Credit (PTC)²⁸

003817

- a) Investment tax credits typically provide a source of funds to finance an owner's capital costs because they allow an owner to reduce its tax burden by a portion of the amount that was invested. The principal tax credit available for wind energy projects is the federal Production Tax Credit (PTC).
- b) The PTC, enacted as part of the Energy Policy Act of 1992, has been extended twice over the past five years, but each time Congress allowed the credit to expire before acting, and then only approved short extensions. The PTC is currently scheduled to expire on December 31, 2003. Both the Senate and House Energy Bills extend the PTC through December 31, 2006.²⁹ The PTC provides a 1.5-cent per kilowatt-hour (kWh) credit (adjusted for inflation) for electricity produced from wind technology during the first ten years of operation (closed-loop biomass and poultry waste are also now included).³⁰ The PTC is adjusted annually for inflation; as adjusted for 2003, it currently stands at 1.8 cents/kWh.³¹
- c) Both new projects and existing projects can qualify for the PTC; however, an existing project must be "substantially improved" to qualify. To qualify, projects must be located in the U.S. (but can sell across the border). The PTC is only available to owners of qualifying projects (currently defined as wind, closed-loop biomass and poultry waste) and is also only available to the extent that electricity is sold to unrelated third parties.³² Provided a wind farm is "placed in service" during the period that the PTC is available, the owner/developer may obtain the tax credit for the first ten years of operation.³³
- d) Small wind developers who may not have a sufficient tax base to use the PTC form partnerships with one or more investors who can utilize the PTC.³⁴ If an owner decides to syndicate the credits, an investor would make an up-front payment which is used for construction of the project, and, in turn, the investor would receive substantially all of the PTCs.³⁵ As an example of the potential value of this credit, one estimate is that Cape Wind Associates would receive in excess of \$20 million annually for ten years in production tax credits once its 130 turbine wind farm is constructed (see Section III(C)(1) for more detail on the Cape Wind project).³⁶
- e) While the federal PTC has been a major stimulus to the recent growth of the domestic wind power market, its so-called double-dipping provision may also diminish the value of certain types of state wind power incentives. The "double-dipping" provision requires that the federal PTC be reduced if a wind project receives certain kinds of state or local support (such as up-front grants or below-market interest loans). State policymakers may be interested in enacting wind power policies that leverage, and do not simply displace, the value of federal incentives.³⁷

3. Federal Renewable Portfolio Standard (RPS)

- a) Although the Senate Energy Bill calls for investor-owned U.S. utilities to produce 10% of their power from renewable sources such as solar, wind or geothermal

energy by 2020, it is unlikely that this language will ultimately be adopted in any energy bill enacted during this congressional session.³⁸

- b) Many in the utility sector, including EEI, have argued that, although renewable energy resources should be promoted through incentives and state programs, a federal RPS should not be imposed upon the utilities or consumers. A mandatory federal RPS would arguably increase electricity prices for consumers, create inequities between regions, and divert funds needed for ensuring a reliable future supply of energy and transmission.³⁹
- c) Others argue that an RPS of 20% by 2020 is easily affordable. A June 2001 study by the U.S. Energy Information Administration (EIA) shows that, by 2020, total electric bills would be \$580 million (0.1%) lower with a 20% RPS.⁴⁰ Reflecting natural gas savings after 2020, an RPS would likely produce net savings for consumers. Because an RPS creates a diverse and competitive market for energy supply, EIA found that an RPS would reduce natural gas prices, offsetting small electricity price increases. The Department of Energy's Interlaboratory Working Group, consisting of the five national energy research labs, found that a 20% RPS, when combined with energy efficiency programs, could save consumers billions of dollars.⁴¹
- d) One of the main impacts to electric utilities from a federal RPS, if ever enacted, would be the requirement to manage resource portfolios to ensure that a sufficient proportion of eligible renewable energy is included. Other impacts could include requirements to: certify renewable generation, if any, and apply for the appropriate number of RECs; verify that utilities have met their renewable purchase requirements; and integrate renewables into the grid.⁴²

4. Other Tax Benefits and Financing Issues for Wind Projects

- a) In addition to the federal PTC, there are other tax credits and subsidies available for wind developers.
 - (1) Accelerated Depreciation: Wind energy equipment can be depreciated over five years.⁴³ This depreciation in turn may then be deducted from the business' yearly income. Accelerated depreciation helps to alleviate a wind developer's initial capital costs.⁴⁴
 - (2) Depreciation Bonus: This provision allows businesses to take an additional 30% depreciation on solar, wind, and geothermal property in the first year. The 30% bonus depreciation applies to property acquired between September 11, 2001 and May 6, 2003.⁴⁵ In May 2003, Congress increased the bonus depreciation to 50% in the first year that the equipment is purchased and placed into service.⁴⁶ To qualify for the 50% first-year bonus depreciation, the property must be acquired by the taxpayer and used by the taxpayer on or after May 5, 2003 and before January 1, 2005 (with some limitations).⁴⁷
 - (3) Section 45D tax credit (New Market Tax Credit): available to community development entities for investments in qualifying low-income communities.⁴⁸
- b) Lending institutions consider wind energy to be high risk due to its variable nature; therefore, available financing terms may not be as beneficial as those provided to

more conventional energy developments. The tax benefits discussed above, in effect, provide government subsidies for wind projects through the tax code.⁴⁹ These subsidies provide funds that offset the cost of a wind project by approximately 65%.⁵⁰

- (1) Developers can be divided into two groups: (i) active wind developers with a tax base (e.g., FPL and Shell Wind Energy) and (ii) active wind developers without a tax base (mainly European and non-institutional wind developers). Developers with a tax base typically finance construction of projects on their balance sheets, and re-evaluate financing options post-construction. Such developers also seek to acquire projects in development or construction from developers without a tax base. To date, only a few in the energy industry have taken this approach. This type of development may be attractive to energy companies with unregulated generation affiliates.
- (2) Wind developers without a tax base often are able to invest in early stage development, and may be able to support construction costs for smaller projects, but typically lack the capital to fund construction of large projects from their own balance sheets. These developers, however, tend to understand the wind energy business, and frequently seek financing or development partnerships with investors who can provide capital, and who are able to utilize the available tax credits. The challenge in any such partnership or investment relationship is managing the balance between the tax regulations, the developer's objectives and the allocation of the project risks. Partnering with, or investing in, these types of developers may be another opportunity for energy companies to become more active in the wind energy industry.
- (3) Institutional Investors' Perspective: Institutional investors can participate in wind energy projects in a variety of ways. For example, they can be traditional leveraged lease investors or purchasers of PTCs.
- (4) To access institutional funding, wind project financings must be carefully structured. The book (earnings and balance sheet) impact of participation, the lower risk tolerance of the investor (i.e., an unwillingness to take development risks and an aversion to construction risks), and the long-term management of the asset must be reviewed so that deals are properly prepared.

III. Highlights of Offshore Wind Development

There are a limited number of land-based wind power projects operating in Massachusetts, the location of this conference.⁵¹ Interest in these projects has been dwarfed, however, by the dramatic focus on offshore wind.⁵² This section briefly compares the attributes of harnessing offshore and land-based wind energy, summarizes Europe's pioneering offshore efforts, describes the status of offshore projects in the U.S., and discusses several issues relating to federal jurisdiction of offshore wind projects.

A. Comparing Offshore to Land-Based Wind

1. Many of the strongest wind resources in the U.S. are located in the Great Plains or western part of the country; however, the windiest sites are generally located in remote areas, and there are high transmission costs associated with getting the energy from remote generation sources to load centers.⁵³ Offshore winds are typically stronger and less turbulent than land-based winds. Offshore areas can accommodate larger scale projects

that can service regional load centers; significantly, more than half of the U.S. population resides on the coasts, closer to potential offshore wind locations.⁵⁴ Waters on the east coast of the U.S. tend to be relatively shallow closer to shore, while waters are deeper along the west coast. Current technologies generally limit construction of offshore turbines to waters of 50 foot depths or less.⁵⁵ Thus, until technology advances allow for construction of turbines in deeper waters, offshore wind in the continental U.S. will likely be limited to the eastern U.S. and the Great Lakes.

2. Strong consistent winds increase energy production and revenue potential. Offshore wind projects have to contend with the high cost of building marine foundations, procuring installation equipment, and running submarine cables to carry the electricity to shore. Nevertheless, these costs have decreased substantially in recent years, particularly because of improvements in foundation technology. Operation and maintenance costs are considerably higher for offshore wind plants because ships are often needed to bring personnel and equipment to the turbines and a turbine may be inaccessible when the seas are rough.⁵⁶

B. The European Offshore Wind Experience

1. Europeans have been constructing offshore wind farms for more than a decade. The first offshore wind park, a 5 MW installation near Vindeby, Denmark, came online in 1991. By the end of 2002, ten offshore wind farms were operating worldwide — all in Northern Europe — with a combined generating capacity of 250 MW.⁵⁷ The two largest wind farms in the world are both in Denmark: an offshore wind project at Nysted (72 turbines at 2.3 MWs for a total capacity of 165.6 MW) and Horns Rev (80 turbines at 2 MWs for a total capacity of 160 MW).⁵⁸

C. Proposed U.S. Offshore Wind Projects. There are currently no offshore wind facilities in U.S. waters; however, several projects are proposed along the east coast.

1. Cape Wind Associates—Massachusetts
 - a) A private developer, Cape Wind Associates, is proposing to install 130 wind turbines off the coast of Massachusetts, with a total maximum output of 420 MW. The wind park would be sited on Horseshoe Shoal in Nantucket Sound, five miles from the town of Hyannis on Cape Cod. According to Cape Wind, this location has optimal wind speeds and direction. The Shoal is shallow, which simplifies construction and avoids interference with marine traffic and commercial fishing. Turbines will be spaced one-half to one-third of a mile apart and connected by undersea cables.⁵⁹
 - b) Cape Wind has installed a 196-foot high Scientific Monitoring Station and is measuring wind at three different levels. The data collected will provide wind, wave, tide height, current and water temperature information. The data tower was permitted by the U.S. Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899.⁶⁰ A citizens group, the Alliance to Protect Nantucket Sound, appealed the Army Corps' decision to issue the Section 10 permit. Additional information about this appeal is provided below under "Federal Jurisdiction of Offshore Wind Projects."
 - c) The Army Corps is currently preparing an Environmental Impact Statement/Report (EIS/EIR) under the National Environmental Policy Act for the wind farm. The EIS/EIR is being developed in conjunction with state and

- b) The Corps' decision was appealed to Federal District Court (District of Massachusetts) by the Alliance to Protect Nantucket Sound. The Alliance generally asserted: (1) that the Army Corps lacked the authority to issue a Section 10 permit for activities on the outer continental shelf unrelated to the extraction of resources from the seabed; (2) the Corps' decision to issue the permit was unlawful because Cape Wind did not have and could not obtain the property interest in outer continental shelf lands; and (3) the Corps failed in a variety of ways to satisfy its obligations under the National Environmental Policy Act (NEPA).⁶⁹
- c) In September 2003, Judge Tauro *upheld* the Corps' decision.⁷⁰ The Alliance has indicated that it will appeal this decision.⁷¹

2. 108th Congress

- a) Several bills addressing the permitting of offshore wind farms in federal waters are currently pending in Congress. In general, these bills would grant jurisdiction over offshore wind and other renewable energy facilities to one or more agencies, and provide a mechanism to resolve associated public trust issues.
 - (1) In February 2003, Rep. Barbara Cubin (R-WY) introduced a bill to amend the Outer Continental Shelf Lands Act.⁷² H.R. 793 would give jurisdiction over the permitting of renewable energy development on the Outer Continental Shelf to the Department of the Interior (Minerals Management Service). The bill would authorize the Secretary of the Interior to grant renewable energy projects an easement or right-of-way on the Outer Continental Shelf. The Secretary of Interior would be required to establish fees, rentals, bonus, or other payments for any such property right on a competitive or non-competitive basis.
 - (2) Legislation amending the Outer Continental Shelf Lands Act was introduced by Rep. William Delahunt (D-MA) in March 2003.⁷³ This bill would grant jurisdiction over renewable energy facilities in the coastal zone to the Department of Commerce's National Oceanic and Atmospheric Administration (H.R. 1183). The Secretary of Commerce would be responsible for identifying priority locations for renewable energy facilities in the coastal zone. The bill also establishes a competitive bidding process for interested parties to obtain a license to operate a renewable energy facility and requires annual royalty payments.



- 1 Other sources of renewable energy may include fuel cells, ocean thermal, digester gas, and methane recovery. As described in Section II(B)(2)(a), state and federal laws vary as to what types of energy they classify as "renewable energy." For example, some state laws do not include biomass as a renewable resource because of potential environmental impacts.
- 2 "2003 Global Wind Energy Market Report," American Wind Energy Association (AWEA).
- 3 "Windpower Outlook 2003," AWEA.
- 4 "2003 Global Wind Energy Market Report," AWEA.
- 5 "2003 Global Wind Energy Market Report," AWEA.
- 6 Other European countries leading the way in installed wind power capacity include the Netherlands (217 MW of new wind capacity installed in 2002), Italy (103 MW in 2002), and the U.K. (78 MW in 2002). An additional 525 MW were authorized by the U.K. in 2002, including two offshore wind farms. "Windpower Outlook 2003," AWEA.
- 7 "The Effect of Wind Development on Local Property Values," Analytical Report, Renewable Energy Policy Project, 2003.
- 8 "Wind Group Raises Forecast For New Power Plant Installations," AWEA Press Release, August 20, 2003.
- 9 "The Effect of Wind Development on Local Property Values," Analytical Report, Renewable Energy Policy Project, 2003; see also "Renewable Energy and State Economies," TrendsAlert, Barry Hopkins, May 2003, The Council of State Governments, p. 26.
- 10 "Record breaking year on the way in America," Windpower Monthly, September 2003, p. 29.
- 11 Union of Concerned Scientists
<http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=121>.
- 12 "Renewable Energy and State Economies," TrendsAlert, Barry Hopkins, May 2003, The Council of State Governments, p. 26.
- 13 "Wind Energy for Electric Power," Renewable Energy Policy Project (REPP),
<http://solstice.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf>.
- 14 "The Most Frequently Asked Questions About Wind Energy," AWEA, 2002.
- 15 AWEA, *Wind Energy Weekly* #1062.
- 16 <http://www.nrel.gov/wind/about_lowspeed.html>.
- 17 <http://www.nrel.gov/wind/about_lowspeed.html>.
- 18 <http://www.nrel.gov/wind/about_lowspeed.html>.
- 19 See <<http://www.dsireusa.org>> for a database of renewable energy incentives.
- 20 See "Wind Energy for Electric Power," by Ari Reeves with Fredric Beck, Executive Editor, Renewable Energy Policy Report, July 2003; see also "Wind Energy Costs" at <<http://www.nationalwind.org/pubs/wes/wes11.htm>>; Renewable Electricity Production Credit, IRS Form 8835; "Alternative Windpower Ownership Structures: Financing Terms and Project Costs," by Ryan Wiser and Edward Kahn of Lawrence Berkeley Laboratory's Energy and Environmental Division, May 1996 <<http://eetd.lbl.gov/ca/EMS/reports/38921.pdf>>; <<http://www.awea.org/policy/incentives.html>>.
- 21 <http://www.eere.energy.gov/state_energy/policy_content.cfm?policyid=27>.
- 22 <<http://www.newrules.org/electricity/rps.html>>.
- 23 <http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=47>.
- 24 <http://www.eere.energy.gov/state_energy/policy_content.cfm?policyid=27>; <<http://www.cga.state.ct.us/ps98/act/pa/pa%2D0028.htm>>.

- ²⁵ Congressional Record, July 31, 2003, Page S10529.
- ²⁶ The Energy Policy Act of 2003, S. 14 and H.R. 6.
- ²⁷ The Energy Policy Act of 2003, S. 14 and H.R. 6; see also "Efficiency, renewables can lower prices in short-term study," Greenwire, Sept. 9, 2003.
- ²⁸ Anyone contemplating using the Production Tax Credit subsidy or any other tax credit should consult with a tax advisor regarding passive loss activity rules and the Alternative Minimum Tax.
- ²⁹ See The Energy Policy Act of 2003, S. 14 and H.R. 6.
- ³⁰ 26 U.S.C. §45.
- ³¹ 26 U.S.C. §45(d)(2); 68 Fed. Reg. 19073.
- ³² 26 U.S.C. §45.
- ³³ 26 U.S.C. §45.
- ³⁴ See AWEA's Small Wind Toolbox at <<http://www.awea.org/smallwind/toolbox/INSTALL/financing.asp>>.
- ³⁵ The syndication of PTCs involves complicated financial and tax structuring which is beyond the scope of this paper. In brief, the owner of the project would be a limited partnership or a limited liability company in which the developer of the project would be the general partner or managing member and the investor would be the investor member or limited partner. Under the partnership agreement or operating agreement of the owner, the investor would be allocated substantially all of the owner's PTCs and depreciation losses, as well as a much smaller percentage of the owner's cash flow from operations. In return for these benefits, the investor would make a substantial capital contribution to the owner. The amount of the investor's capital contribution, as well as the timing thereof, and any related guarantees from the developer to the investor, would all be subject to negotiation between the developer and the investor. If the investor made its capital contribution to the owner during the construction of the project, the proceeds thereof would provide a source of funds for the development of the project; if the investor made its capital contribution over time as PTCs were delivered, then the owner would most likely finance the investor's capital contribution obligation in order to obtain funds earlier in the development process in order to fund a portion of the development costs. While few, if any, PTCs have been syndicated in this manner to date, many in the financial services community believe that as the wind power industry matures, syndication of PTCs will become a common method of financing, much as the syndication of tax credits already is commonplace in connection with Section 29 nonconventional fuel tax credits, Section 42 low-income housing tax credits, and Section 47 historic rehabilitation tax credits.
- ³⁶ "Cape Wind Eyes Subsidy," by Jack Coleman, Cape Cod Times, July 26, 2003.
- ³⁷ "Analyzing the Interaction Between State Tax Incentives and the Federal Production Tax Credit for Wind Power," Ryan Wiser, Mark Bolinger, Troy Gagliano, September 2002, Ernest Orlando Lawrence Berkeley National Laboratory, <http://www.cleanenergystates.org/CaseStudies/LBL_Tax_Incent_Wind.pdf>.
- ³⁸ <http://www.energy.senate.gov/news/dem_release.cfm?id=212975>.
- ³⁹ See EEI Web site:
<http://www.eei.org/industry_issues/electricity_policy/federal_legislation/EEI_RPS.pdf>.
- ⁴⁰ See "EIA Study: National Renewable Energy Standard of 20% is Easily Affordable," Union of Concerned Scientists Fact Sheet <http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=45>.
- ⁴¹ See "EIA Study: National Renewable Energy Standard of 20% is Easily Affordable," Union of Concerned Scientists Fact Sheet <http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=45>.
- ⁴² "How a National Renewables Portfolio Standard Would Affect Utilities," AWEA, June 30, 1999.
- ⁴³ IRS Code Section 168, as amended; see IRS Form 4562: Depreciation and Amortization and Instructions for Form 4562; see also "Modified Accelerated Cost Recovery System (MACRS) with 50% Bonus Depreciation," Database of State Incentives for Renewable Energy, July 10, 2003.
- ⁴⁴ "The Economics of Wind," by Gary C. Young, *Public Utilities Fortnightly*, August 1, 2003; see also AWEA <<http://www.awea.org/policy/incentives.html>>.

- 45 IRS Tax Code 168.
- 46 Job Creation and Tax Relief Reconciliation Act of 2003.
- 47 IRS Tax Code 168, as amended; see IRS Form 4562: Depreciation and Amortization and Instructions for Form 4562.
- 48 26 U.S.C. §45(d).
- 49 Federal subsidies for wind are small in comparison to those for competing sources. See the Energy Policy Act of 2003, S.14 and H.R. 6 (discussing nuclear subsidies and providing nuclear power liability protection along with an aggressive pursuit of a new nuclear power plant by 2010); see also "Federal Energy Subsidies: Not All Technologies Are Created Equal," by Marshall Goldberg, Renewable Energy Policy Project, Research Report No. 11, July 2000; "Estimates of Federal Tax Expenditures for Fiscal Years 1999-2003," Congressional Joint Committee on Taxation, report released on December 15, 1998; and "Federal Energy Subsidies: Energy, Environmental, and Fiscal Impacts," Douglas N. Koplow, Alliance to Save Energy, 1993.
- 50 "Fresh Look at Wind Energy Blows to US From Europe," Sustainable Development International <<http://www.sustdev.org/energy/Industry%20News/06.01/26.01.shtml>>; see "The Economics of Wind," by Gary C. Young, *Public Utilities Fortnightly*, August 1, 2003; see also the Energy Policy Act of 2003, S.14 and H.R. 6.
- 51 Princeton, MA (0.32 MW installed); Hull, MA (0.66 MW installed).
- 52 In an effort to proactively address use of coastal resources, Governor Mitt Romney announced the "Massachusetts Ocean Management Initiative" in March 2003. This initiative is aimed at managing the state's ocean resources, coordinating with the federal government on projects in federal waters, and addressing environmental, planning, and public trust issues in both state and federal waters. See <<http://www.state.ma.us/czm/oceanmgtinitiative.htm>> for more information.
- 53 NWCC offshore wind meeting, September 25, 2003, Bruce Bailey, AWS Scientific.
- 54 Wind Energy for Electric Power, REPP <http://solstice.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf>.
- 55 NWCC offshore wind meeting, September 25, 2003, Bruce Bailey, AWS Scientific.
- 56 "Wind Energy for Electric Power," REPP <http://solstice.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf>.
- 57 "Wind Energy for Electric Power," REPP <http://solstice.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf>.
- 58 "Which is the Biggest," *Windpower Monthly*, September 2003, p. 78. Due to permit limitations, the official generating capacity of the Nysted Wind farm is 158.4MW.
- 59 <<http://www.capewind.org>>.
- 60 33 U.S.C. §403.
- 61 As the issuing authority for a federal permit under Section 10 of the Rivers and Harbors Act, the Army Corps is the lead agency in preparing an Environmental Impact Statement (EIS). A portion of the wind project is also located in state waters, and triggers thresholds for environmental review under the Massachusetts Environmental Protection Act, requiring an Environmental Impact Report (EIR) under state law. The joint EIS/EIR will also address regional issues under the jurisdiction of the Cape Cod Commission.
- 62 <<http://www.nae.usace.army.mil/>>.
- 63 <<http://www.lioffshorewindenergy.org/press/2003/jan22.html>>.
- 64 <<http://www.lioffshorewindenergy.org/press/2003/jan22.html>>; see <<http://www.lioffshorewindenergy.org/>> for further information.
- 65 *Windpower Monthly*, July 2003, p. 35.
- 66 See <<http://www.winergyllc.com>>; see also <<http://www.nae.usace.army.mil/>>.

⁶⁷ 33 U.S.C. §403.

⁶⁸ See <<http://www.nae.usace.army.mil/>>.

⁶⁹ See Complaint, *Alliance to Protect Nantucket Sound, Inc. v. United States Department of the Army*, Civil Action No. 02-11749-JLT, U.S. District Court for the District of Massachusetts, filed August 20, 2002; Decision, *Alliance to Protect Nantucket Sound*, Civil Action No. 02-11749-JLT, U.S. District Court for the District of Massachusetts, September 18, 2003; and <<http://www.saveoursound.org>> for further information.

⁷⁰ Decision, *Alliance to Protect Nantucket Sound*, Civil Action No. 02-11749-JLT, U.S. District Court for the District of Massachusetts, September 18, 2003.

⁷¹ Statement by Odin Smith, Esq., Perkins Coie LLP, Boston College Law School Fall Symposium “Coastal Wind Power Energy Generation: Capacities and Conflicts,” September 25, 2003.

⁷² H.R. 793: To amend the Outer Continental Shelf Lands Act to authorize the Secretary of the Interior to grant easements and rights-of-way of the Outer Continental Shelf for activities otherwise authorized by the Act. Sponsored by Rep. Cubin, Barbara (introduced February 13, 2003).

⁷³ H.R. 1183: To promote the Sensible Development of Renewable Energy in the Waters of the Coastal Zone, and for other purposes. Sponsored by Rep. Delahunt, William D. [MA-10] (introduced March 11, 2003).

ENVIROCITIZEN

the center for
environmental citizenship

Northeast Office

83 Highland Street

Roxbury, MA 02119

617.427.3598 ph

617.442.3742 fx

www.envirocitizen.org

3918

Karen Kirk Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers,
New England District
696 Virginia Road, Concord, MA 01742

Dear Ms. Kirk Adams:

Clean air, clean water, and healthy communities are all things that every person and group like EnviroCitizen wants to see in their country and in their world, but balancing these ideals with the nature of business, industry, and engrained perceptions in our world has made them almost unattainable. The Army Corps of Engineers is faced with a federal decision about the Cape Wind Project off the shores of Massachusetts which will help to determine our ability to reach these ideals. Just as important as reaching these ideals, which to some may be considered human rights, is noting the effort put into striving to reach them. The effort put forth to support Cape Wind has been magnanimous and passionate, especially among young people.

The effort put forth by young people and encouraged by EnviroCitizen in favor of Cape Wind shows the dedication and connection that they have to making clean energy a reality, which will in turn allow for these ideals to become reality. The amount of pollution spewed into the air around the clock in the name of dirty energy is damaging to health and the environment, and it does not exist because it has a lot of support, it exists because of power, money, and the lack of alternatives, or the opportunity for them. But now, there is an alternative that will offset tons and tons of particulate matter and greenhouse gases, with no significant negative effects, and so the choice seems very clear to us and those we represent.

Acknowledging the importance of this issue, completing and releasing a thorough study, and allowing the public to comment on your DEIS are all very important steps, and now it is time to analyze what the public wants and what is best for the local communities and the nation. The young people we work with every day on clean energy issues are a great way to determine what makes sense, as they represent a contingent of people who not only care about their health and environment today, but they care about the state of their health and environment many years down the line. This allows for a longer term perspective that tends to run opposite the ideas held by the dirty power plants, and calls for a Clean Energy Revolution. To make sure they still have good health, environmental justice, jobs, clean air, clean water, and healthy communities later, there needs to be a Clean Energy Revolution right now. And it can start with the Cape Wind project.

National Office
ph 202.986.1650
cec@envirocitizen.org

Rocky Mountain Office
ph 303.534.5798
cecwest@envirocitizen.org

Northwest Office
ph 206.256.6429
cecnw@envirocitizen.org

ENVIROCITIZEN

the center for
environmental citizenship

Northeast Office
83 Highland Street
Roxbury, MA 02119
617.427.3598 ph
617.442.3742 fx
www.envirocitizen.org

3918

Environmental justice, an important youth issue, is too often unaddressed in the discussion around Cape Wind. But going back to the ideals of clean air, clean water, and healthy communities, it becomes very clear and very pertinent. Many communities do lack clean air, clean water, and good health, and they are often low-income, people of color communities. There are more dirty power plants, hazardous waste dumps, and bus depots located in the backyards of these communities, and therefore they also have higher rates of asthma and respiratory illness and school absenteeism. If it is more important to have a better view for the people on Cape Cod than it is to ensure that all communities have access to clean air and water and good health, then it is a narrow vision indeed held by the decision making bodies of our country.

We trust that the Army Corps of Engineers will not only represent the general public and the youth of this country in their decision but will also represent the ideals of the people of this country by supporting the Cape Wind Project. Your permit will permit clean air, permit clean water, permit healthy communities, and ignite the Clean Energy Revolution.

Sincerely and Urgently,

The Center for Environmental Citizenship

Ruby Jugebaev
organizing Fellow

Jim Clarys
Northeast Field Organizer

Fausa Jakkah
Regional Director

National Office
ph 202.986.1650
cec@envirocitizen.org

Rocky Mountain Office
ph 303.534.5798
cecwest@envirocitizen.org

Northwest Office
ph 206.256.6429
cecnw@envirocitizen.org

Dear, Karen Kirk-Adams

3919

I am a native of Wellfleet on Cape Cod, MA.
I support the windfarm on Nantucket.

As an environmentally conscious local
who has been studying environmental
issues in school and I believe using
wind power is the best opportunity for the
Cape. We could be an innovator
for the rest of the state and
country! The best part of the
Cape is it's natural beauty, lets
keep it that way!

Sincerely,

Smith Felton