

**CLIMATE CHANGE AND ENERGY: LEGAL IMPLICATIONS  
AND OPPORTUNITIES FOR MAINE & NEW HAMPSHIRE**

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**LAW**

**WHO AM I...**



**Jeff Thaler is the University of Maine's first Visiting Professor of Energy Policy, Law & Ethics, a Visiting Professor at Maine Law School, and is Associate University Counsel. Jeff has been a successful trial, environmental and energy lawyer in Maine for several decades, and taught from nursery school to graduate school.**

**He has been for the past 10 years the attorney for all of UMaine's floating deepwater wind projects and initiatives—handling all regulatory, permitting, contracting, and related issues at local, state and federal levels.**

**Jeff is a Founder and Board Chair of the Environmental and Technology Council of Maine; and a Founder and 3rd President of the American College of Environmental Lawyers. Jeff has developed and taught courses on Renewable Energy Law, Energy Economics and Law, Legislative and Administrative Law, Toxic Torts, Climate Change Law and Policy. He is the author of *Fiddling as the World Burns: How Climate Change Urgently Requires a Paradigm Shift in the Permitting of Renewable Energy Projects*, 42 ENVTL. L. 1101 (2012), and lead author of The Maine Environmental Handbook and the LexisNexis Treatise, *Treatment of Greenhouse Gases Under the National Environmental Policy Act*.**

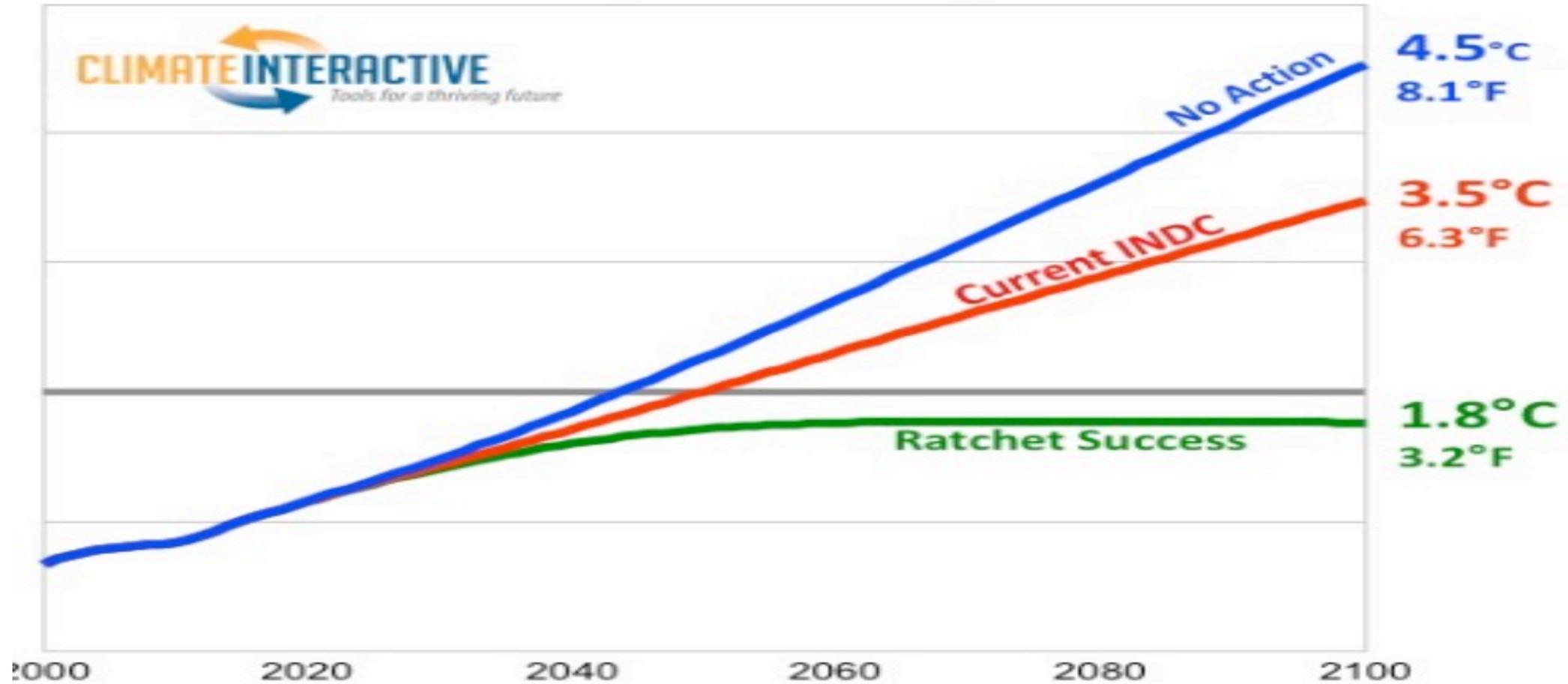
TO BEST MAKE ENERGY AND ENVIRONMENTAL  
POLICY DECISIONS, YOU MUST FIRST PASS  
YOGI BERRA'S TEST...

**If you don't know where you're going  
when you get there you'll be lost.**



<https://img.climateinteractive.org/wp-content/uploads/2015/12/Ratchet-Success-14-December-2015.pdf>

## Global Temperature Change



# Why Care about Energy Sources for Climate Adaptation?

**“Energy is the golden thread that connects economic growth, social equity, and environmental sustainability.” — former U.N. Secretary General Ban Ki-moon**

- <https://climatechangeandenergy.com/#/?section=introduction-to-energy-climate-change>

**About 65% of the world's greenhouse gas emissions are from the burning of fossil fuels for energy to be used for heating, electricity, transportation and industrial processes.**

- [https://www.eea.europa.eu/signals/signals-2017/infographics/energy-and-mitigating-climate-change/image/image\\_view\\_fullscreen](https://www.eea.europa.eu/signals/signals-2017/infographics/energy-and-mitigating-climate-change/image/image_view_fullscreen)

# ECONOMIC TRENDS

- **1974: 3 million out of state visitors per year to Maine, vs.**
- **2004: 26 million out of state visitors per year to Maine**
- **Tourism has grown more than 5x since 1972-73, to about **\$6 Billion** per year...which is roughly equivalent to-----**

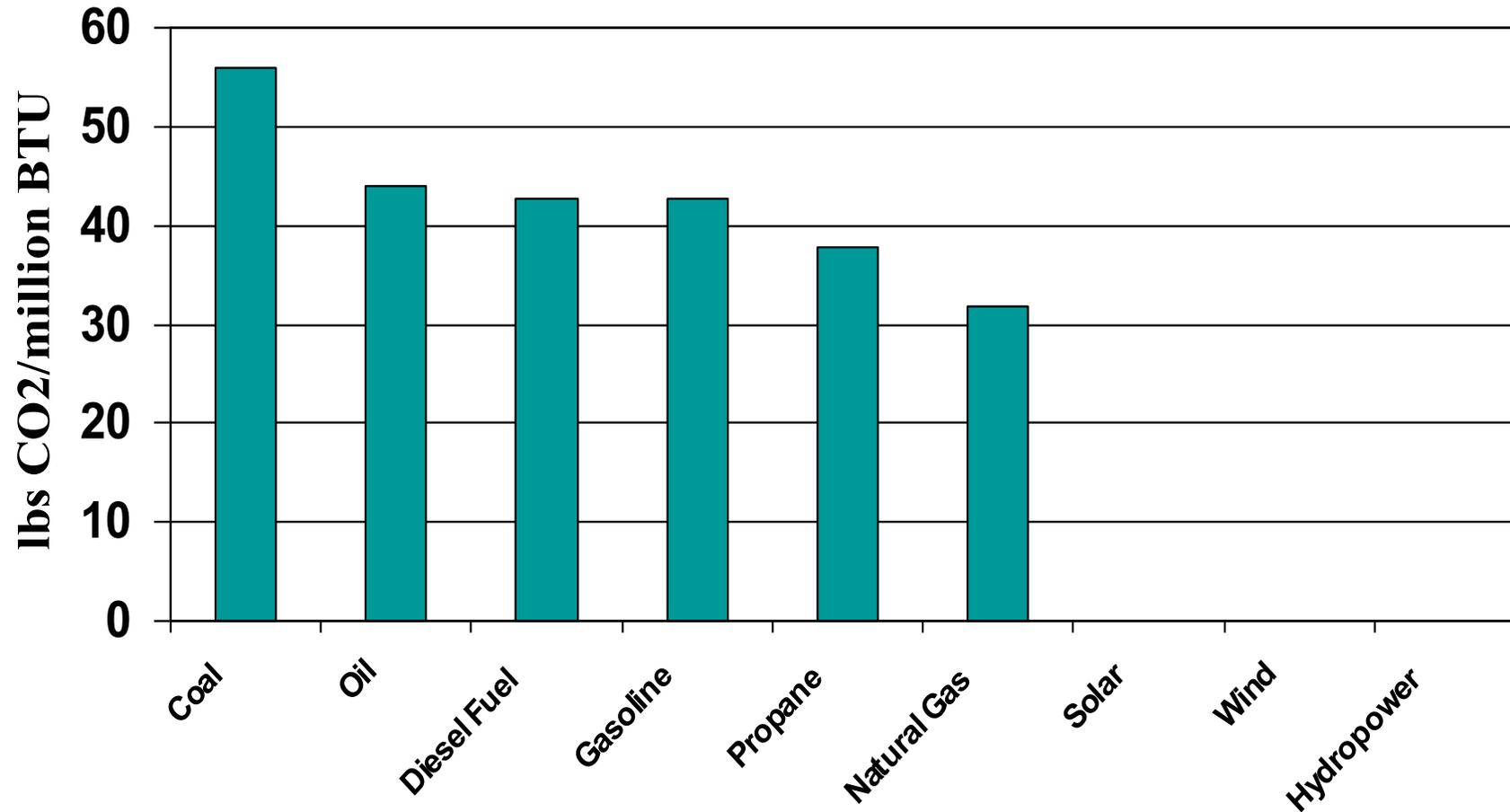
# MAINE ENERGY USE TRENDS

- The Approximately **\$5.5 Billion** Per Year Mainers Export to Purchase Fossil Fuels for Transportation, Heat, and Electricity Needs (Comparison: Maine State Budget is \$6.5 Billion Per Year)
- About 90% of the Energy Mainers Use are Foreign (Outside of Maine) Fossil Fuels—Which Are Burned to Generate Energy and Additionally Generate-----



# Why Care about Fossil Fuels?

## Relative CO2 Emissions



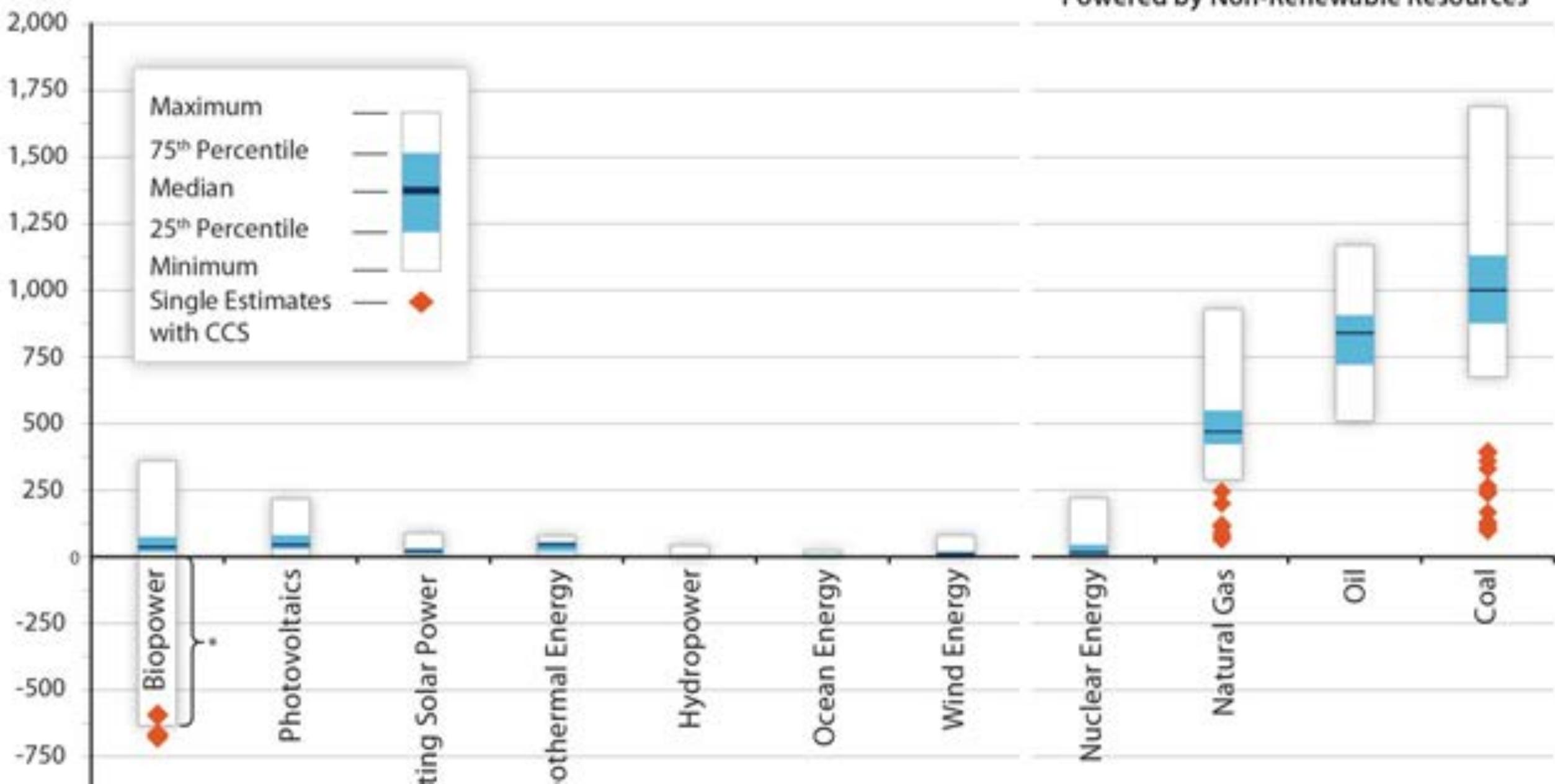
**Do You Want to See Increasing CO2 emissions?**

**[Http://trillionthtonne.org/](http://trillionthtonne.org/)**

**(Estimated cumulative emissions from fossil fuel use, cement production and land-use change since industrialization began) (1760)**

Electricity Generation Technologies Powered by Renewable Resources

Electricity Generation Technologies Powered by Non-Renewable Resources



# 2009 National Research Council “Hidden Costs of Energy”

--Non-climate damages estimated to be **\$120 Billion** in **2005** (human health, grain crop, timber yields, building materials, recreation, visibility of outdoor vistas)

--\$62 Billion Coal electricity generation & \$740 MM Natural Gas

--\$56 Billion from ground transportation (oil-petroleum)

--\$1.4 Billion from Heating with Natural Gas

# National Research Council Conclusions

**--Non-climate damages from electricity generation and transportation exceed \$120 billion (2005)--  
principally related to emissions of NO<sub>x</sub>, SO<sub>2</sub>, PM.**

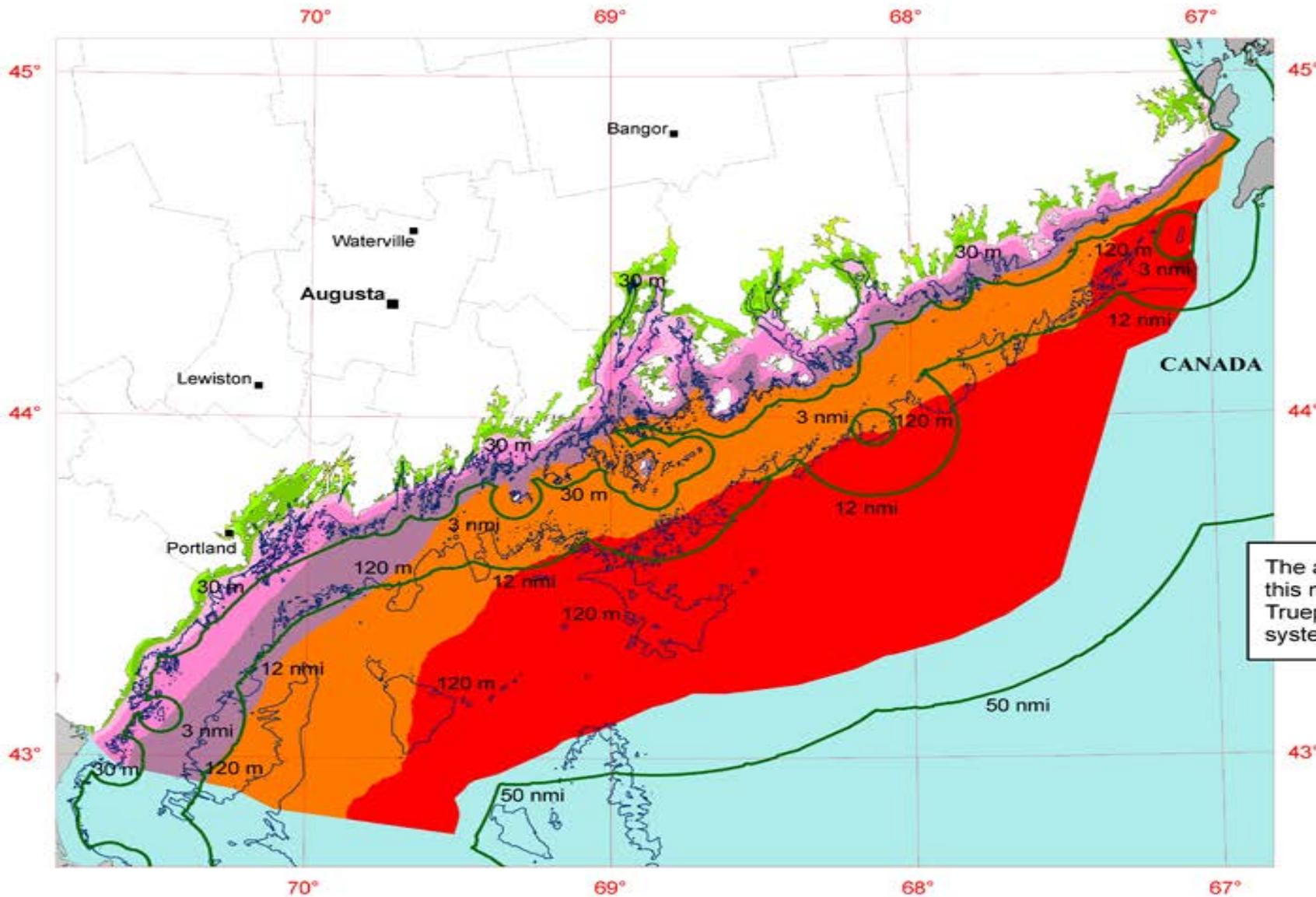
**--A substantial underestimate because it does not include damages related to climate change, health effects of hazardous pollutants, ecosystem effects, or infrastructure and national security.**

**--Climate damages **would likely be** at least as large as non-climate damages.**

# Maine's Ocean Energy Resources

- **Off-shore Wind: 82% of Maine coastal waters have Class 5 or stronger winds—highest in Northeast**
- **Legislative goal: 3-5,000 MW in next 10 years**
- **EPRI study: 250 MW of tidal power capacity**
- **Some potential wave energy development**

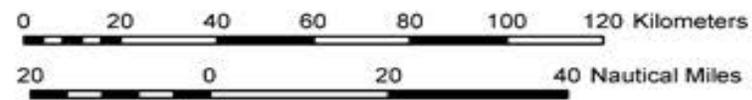
# Maine 90 m Offshore Wind Speed



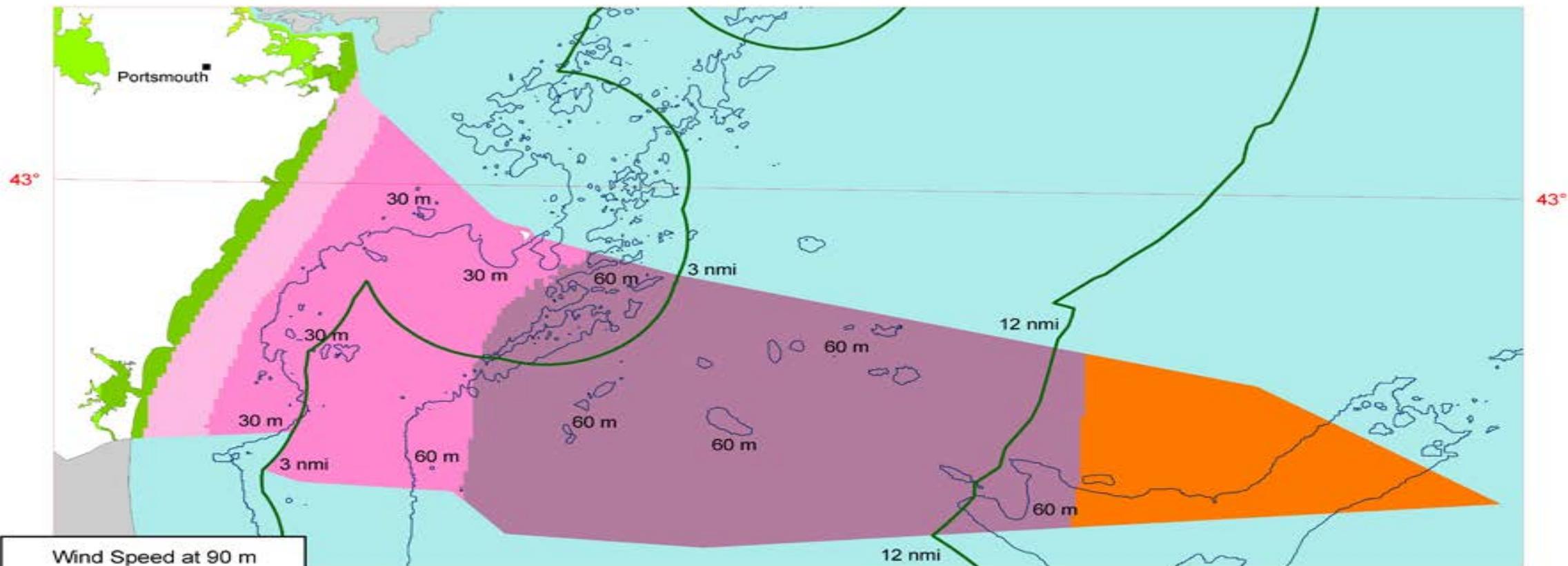
**Contours**  
 — Water Depth (Meters)  
 — Distance from Shore (Nautical Miles)

The annual wind speed estimates for this map were produced by AWS Truepower using their MesoMap system and historical weather data.

Wind Speed at 90 m		
	m/s	mph
	11.5 - 12.0	25.7 - 26.8
	11.0 - 11.5	24.6 - 25.7
	10.5 - 11.0	23.5 - 24.6
	10.0 - 10.5	22.4 - 23.5
	9.5 - 10.0	21.3 - 22.4
	9.0 - 9.5	20.1 - 21.3
	8.5 - 9.0	19.0 - 20.1
	8.0 - 8.5	17.9 - 19.0
	7.5 - 8.0	16.8 - 17.9
	7.0 - 7.5	15.7 - 16.8
	6.5 - 7.0	14.5 - 15.7
	6.0 - 6.5	13.4 - 14.5
	0.0 - 6.0	0.0 - 13.4



# New Hampshire - 90 m Offshore Wind Speed



## Wind Speed at 90 m

	m/s	mph
	11.5 - 12.0	25.7 - 26.8
	11.0 - 11.5	24.6 - 25.7
	10.5 - 11.0	23.5 - 24.6
	10.0 - 10.5	22.4 - 23.5
	9.5 - 10.0	21.3 - 22.4
	9.0 - 9.5	20.1 - 21.3
	8.5 - 9.0	19.0 - 20.1
	8.0 - 8.5	17.9 - 19.0
	7.5 - 8.0	16.8 - 17.9
	7.0 - 7.5	15.7 - 16.8
	6.5 - 7.0	14.5 - 15.7
	6.0 - 6.5	13.4 - 14.5
	0.0 - 6.0	0.0 - 13.4

## Contours

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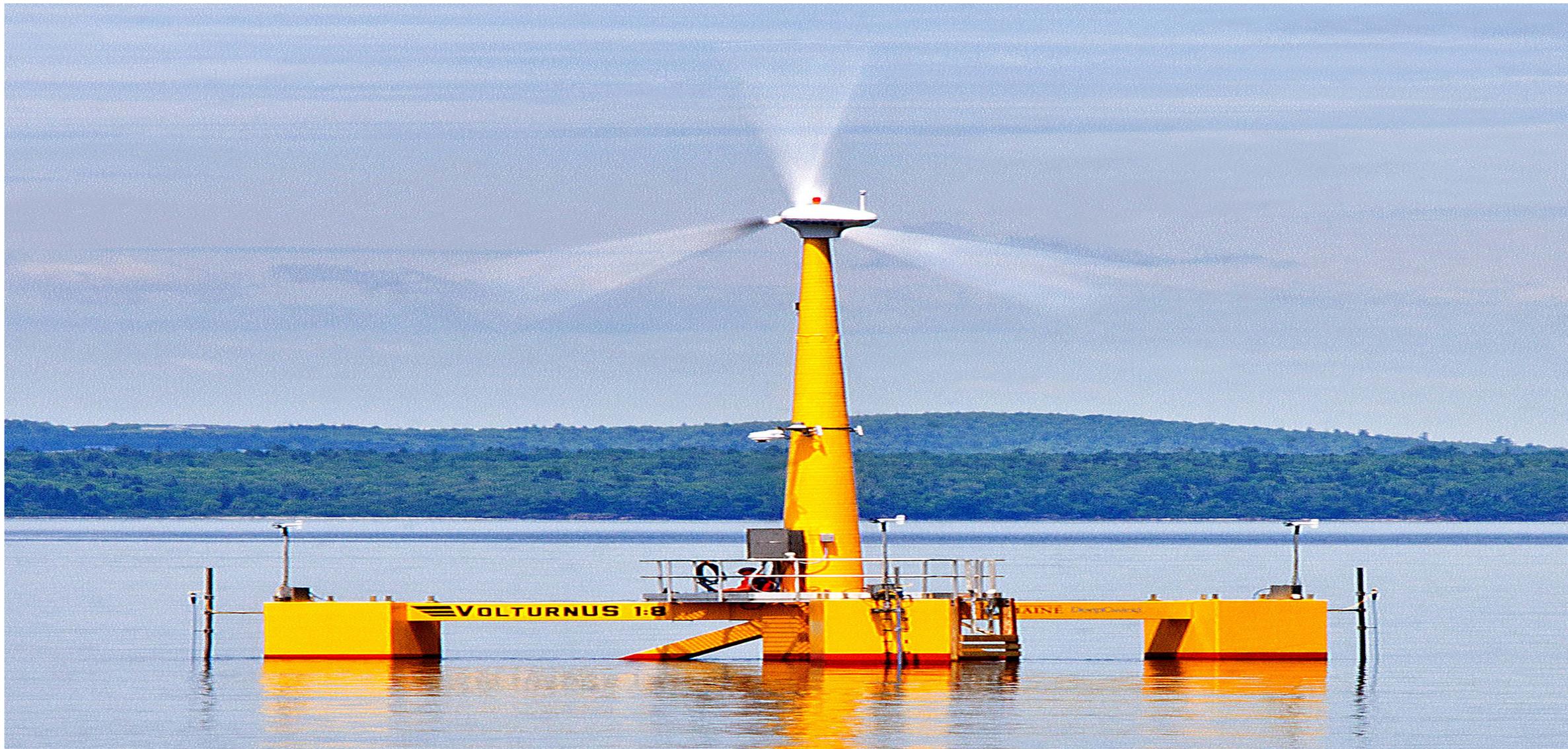
5 0 5 10 15 Kilometers

2 0 2 4 6 8 Nautical Miles

# VoltturnUS Towed at Bucksport Bridge



# At the Castine Site



# Ocean Permitting and Leasing Roadmaps

- [http://www.e2tech.org/Resources/Documents/MOWII Offshore Wind Roadmap JAN2013.pdf](http://www.e2tech.org/Resources/Documents/MOWII_Offshore_Wind_Roadmap_JAN2013.pdf)
- [http://www.e2tech.org/Resources/Documents/MOWII MHK Roadmap JAN2013.pdf](http://www.e2tech.org/Resources/Documents/MOWII_MHK_Roadmap_JAN2013.pdf)

# Decarbonization & Municipalities

<https://carbonneutralcities.org/about/>

<http://www.synapse-energy.com/sites/default/files/ACEEE-Deep-Decarbonization-Paper.pdf>

**“Challenges and Opportunities for Deep Decarbonization through Strategic Electrification under the Utility Regulatory Structures of the Northeast” 2018 Hopkins, Takahashi & Lis**

# Preparing for Climate Change in New Hampshire and Maine

- <https://www.georgetownclimate.org/adaptation/state-information/new-hampshire/overview.html>
- <https://www.georgetownclimate.org/adaptation/state-information/maine/overview.html>
- <https://www.nhpr.org/post/nh-town-meeting-voters-approve-range-responses-climate-change#stream/0>

# **Model Protocols for Climate Change Impact Analysis by Government Decisionmakers**

**<http://columbiaclimatelaw.com/program-areas/environmental-assessment/eia-protocols/>**

# **Model Municipal Ordinances for Solar and Wind Project Siting, and Green Buildings**

**<http://columbiaclimatelaw.com/resources/model-laws-and-protocols/model-municipal-ordinances/>**

# Legal Resources for Climate Change Adaptation

• <http://columbiaclimatelaw.com/resources/adaptation-database/#landuse>

• Federal Statutory and Regulatory Violations

- Pollution Control Statutes
- Occupational Safety and Health Act
- Americans with Disabilities Act

• Rules Governing Federal Agency Projects and Activities

- United States Army Corps of Engineers
- Environmental Impact Assessment
- Natural Resource Planning

• Common Law Doctrines

- Tort Law
- Takings
- Public Trust

• Local Land Use and Planning

• Building Codes

• Federal Flood Mapping, Flood Insurance, and Disaster Assistance

• Public Utility Commission Actions

• Contractual, Fiduciary and Professional Obligations

- Risk Disclosures, lender due diligence, expert advice
- Professional licensing boards and practices

• Insurance and Reinsura



# RWS aka ecomaine—73 communities



# Solar Oppportunities and Municipalities

- <https://www.revisionenergy.com/at-work/solar-ppas-municipality-cities-towns/>
- **EPA Local Government Solar Portal [note: Out of date!]**
- <https://www.epa.gov/repowertoolbox/local-government-solar-project-portal#infotable>

# **New Hampshire Town And City Energy Efficiency and Renewable Energy Programs for New Hampshire Municipalities**

**<https://www.nhmunicipal.org/TownAndCity/Article/622>**

## **Maine Adaptation Toolkit**

**<https://www.maine.gov/dep/sustainability/climate/adaptation-toolkit.html>**

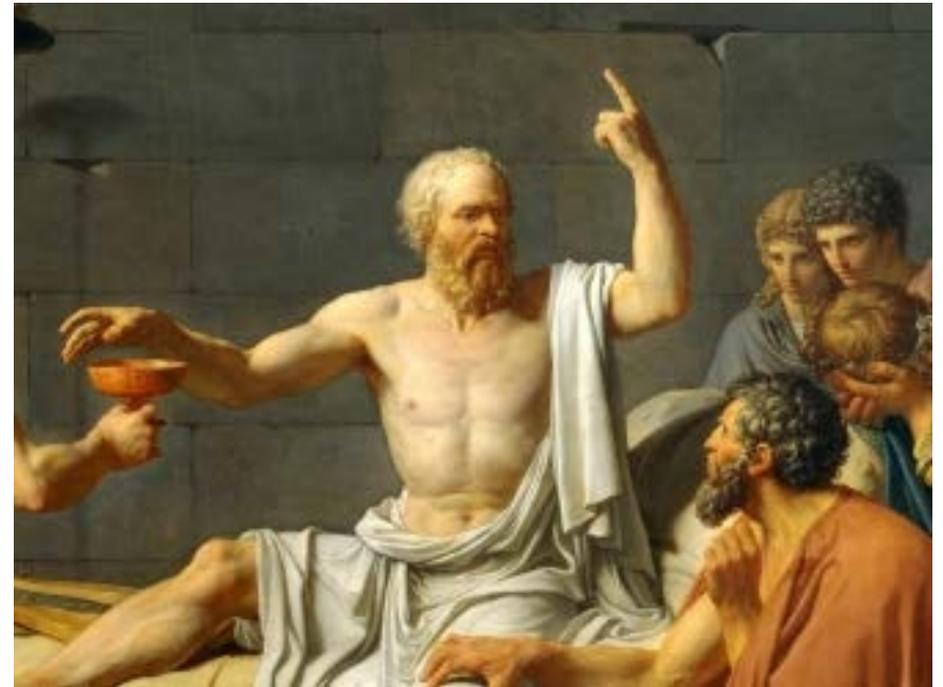
- LD 564 An Act To Encourage the Installation of Solar Panels on Residential Property**
- LD 1127 An Act To Expand Community-based Solar Energy in Maine**
- LD 1191 An Act To Exempt Solar Energy Equipment from Property Tax**
- LD 273 An Act To Require Transmission and Distribution Utilities To Purchase Electricity from Renewable Resources at Certain Prices**
- LD 334 An Act To Change the Definition of "Renewable Capacity Resource"**
- LD 922 An Act To Provide a Property Tax Exemption for Renewable Energy Fixtures**
- LD 1027 An Act To Eliminate the 100-megawatt Limit on Hydroelectric Generators under the Renewable Resources Laws**
- LD 1119 An Act To Authorize a General Fund Bond Issue To Support Investments in Energy Efficiency and Renewable Energy in Municipalities and SAUs**
- LD 1279 An Act To Modernize Maine's Renewable Portfolio Standard**
- LD 1401 An Act To Study Transmission Solutions To Enable Renewable Energy Investment in the State**
- LD 1430 An Act To Create Tax Equity among Renewable Energy Investments**
- LD 1465 An Act To Diversify Maine's Energy Portfolio with Renewable Energy**
- LD 1494 An Act To Reform Maine's Renewable Portfolio Standard**
- LD 1562 An Act To Encourage the Use of Renewable Energy**
- LD 1284 An Act To Create the Science & Policy Advisory Council on the Impact of Climate Change on Maine's Marine Species**

**LD 1679 An Act To Establish the Maine Climate Change Council To Assist Maine To Mitigate, Prepare for and Adapt to Climate Change**

- 4. Adaptation and resilience strategies. The updated climate action plan must address the impacts of climate change upon the State and provide strategies and actions for climate adaptation and resiliency. These strategies must include implementation guidelines that:**
- A. Prioritize the welfare of the State's citizens and visitors and recognize and foster the value of the State's natural resources;**
  - B. Encourage diversity, inclusion and equity;**
  - C. Provide education and training opportunities when appropriate;**
  - D. Build upon existing global, national and state plans and partnerships for addressing climate adaptation, emergency preparedness and disaster risk reduction;**
  - E. Encourage investments that prevent and proactively mitigate risk;**
  - F. Encourage, foster and utilize the most recent scientific and technical information available; and**
  - G. Incorporate means for measuring progress.**

# YET— WHY CAN'T EVERYONE BETTER CONFRONT “CLIMATE CHANGE”?

Climate Change is an existential threat on the scale of nuclear war—threats to our sense of place, identity, way of life, expectations of the future, protection of our children and to defend our tribe...BUT it is getting worse (415 ppm!!), not better—WHY??



# The Human Mind: Cognitive Barriers

**Climate Change is not concrete, immediate, visible**

**Dealing with CC requires short-term costs and reductions in living standards to mitigate against higher but uncertain losses far in the future**

**There are no pressing deadlines, so it gets pushed to the future**

**Uncertainty justifies inaction**

**CC challenges our innate wiring: it is complex, unfamiliar, slow moving, invisible, intergenerational**

**CC is not caused by an external enemy—we are all personally responsible for increases in emissions, which leads to denial**

PLEASE, DON'T THINK YOU'RE THE ONLY ONE WHO'S GETTING IT WRONG — BILL BR

**DON'T  
EVEN  
THINK  
ABOUT  
IT**

**WHY OUR  
BRAINS  
ARE WIRED  
TO IGNORE  
CLIMATE  
CHANGE**

**GEORGE MARSHALL**

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**MIKE BERNERS-LEE**

"You can't underestimate the fact that I used to think that was done.  
See, finding and useful and enjoyable — all at the same time."

**BILL BRYSON**



**How Bad Are  
Bananas?**

**THE CARBON FOOTPRINT  
OF EVERYTHING**

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# WHERE IN THE WORLD.....

