

## Meeting Agenda/Action Items

**Meeting Name:** Electric Generation & Supply Workgroup,  
Governor's Task Force on Global Warming  
**Date:** September 26-28, 2007  
**Time:** 9:00 am – 3:00 pm  
**Location:** PSC Pecatonica Conference Room  
610 North Whitney Way, Madison

**Members** (\* in attendance, # absent, T teleconference, P partial attendance)

	Name		Name		Name
	Peter Taglia, Co-chair Clean Wisconsin		Kathy Lipp, Co-Chair Alliant Energy		Lori Sakk, PSC State Agency Support
	David Bender Sierra Club		Forrest Ceel IBEW		John Clancy Godfrey & Kahn
	Dennis Dums Citizen's Utility Board		Perry Baird Wisconsin Federation of Cooperatives		Andy Kellen Wisconsin Public Power, Inc
	Charles Matthews Wisconsin Energy Corp.		Phil Montgomery, Representative Adam Raschka, Staff Wisconsin Assembly		Scott Neitzel Madison Gas & Electric
	Tom Smies Wisconsin Public Service Corp		Todd Stuart Wisconsin Industrial Energy Group		Jim Turnure Xcel Energy
	Michael Vickerman RENEW Wisconsin		Lynn Wilson Plum Creek		Tom Damassa, John Larsen, WRI

### Agenda for 09/26/07

Item No.	Subject	Approx. Time	Presenter
1.	Welcome and Review of Agenda	9:00	All
2.	Review of workgroup policy list – spreadsheet Straw Poll on Policies and plan for proceeding with work group recommendations		Lipp/Taglia
3.	Continue Discussion on Policy Summaries <ul style="list-style-type: none"> <li>• Combined Heat and Power</li> <li>• Carbon Capture and Storage</li> <li>• Carbon Performance Standards</li> <li>• Combined Cycle Dispatch</li> </ul>	10:30	Matthews, Stuart Taglia Turnure Smies
4.	Break / Lunch	12:00	
5.	Continue Discussion on Policy Summaries	12:30	
6.	Recap and Plan for Thursday and Friday	2:00	Lipp/Taglia
7.	Public Input	2:45	
8.	Adjourn	3:00	

### Agenda for 09/27/07

Item No.	Subject	Approx. Time	Presenter
1.	Welcome and Review of Agenda	9:00	All
2.	Public Input	9:15	
3.	Preparing for Final Policy Write-ups <ul style="list-style-type: none"><li>• Nuclear</li><li>• RPS and related incentives</li><li>• Other Enabling Policies</li></ul>	9:30	Kellen Clancy, Smies
4.	Break / Lunch	12:00	
5.	Continue Discussion on Policy Summaries	12:30	
6.	Recap and Plan for Friday	2:00	Lipp
7.	Adjourn	3:00	

### Agenda for 09/28/07

Item No.	Subject	Approx. Time	Presenter
1.	Welcome and Review of Agenda	9:00	All
2.	Public Input	9:15	
3.	Preparing for Final Policy Write-ups <ul style="list-style-type: none"><li>• Biomass</li><li>•</li></ul>	9:30	
4.	Break / Lunch	12:00	
5.	Continue Discussion on Policy Summaries	12:30	
	Recap and Plan for Report Preparation	2:00	Lipp/Taglia
6.	Adjourn	3:00	

## Open Action Items from Prior Meetings

Item No.	Open Date	Description	Assigned To	Target Date
1.	7/25	Rules on Lobbying Time for Work Group Activity	Callisto	Interim Report 9/10
2.	8/27	Summarize emissions forecasts from WRI; prepare template to be used to tally policy recommendations from other summaries	Lipp	done
3.	9/11	Prepare Trust Fund / Capital Financing Briefing	Kellen	Done
4.	9/11	Update from Minnesota Wind and Capacity Planning	Turnure	Done
5.	9/11	Recommend Standard Cost Methodology	Bollum/ Matthews/ Smies and PSC	Done

**Electric Generation and Supply Work Group Meeting  
In Support of the  
Governor's Task Force on Global Warming**

**Friday, September 28, 2007  
10:30 a.m. – 3:00 p.m.**

**Public Service Commission of Wisconsin Building  
Pecatonica River Conference Room (basement level)  
610 North Whitney Way  
Madison, Wisconsin**

There will be a work group meeting from 10:30 a.m. to 3:00 p.m. on Friday, September 28, 2007, at the Public Service Commission of Wisconsin Building, in the Pecatonica River Conference Room, 610 North Whitney Way, Madison, Wisconsin, to discuss policy options, reduction targets, and baseline data in support of the Governor's Task Force on Global Warming. The meeting is open to the public. For more information, or if you need special accommodations to attend this meeting, call Lori Sakk at (608) 266-1383.

**Agenda**

- Welcome and Review of Agenda
- Review September 27 Meeting Discussion
- Public Input
- Continue Discussion on Policy Summaries
- Break/Lunch
- Continue Discussion on Policy Summaries
- Additional Public Input
- Next Meeting Assignments
- Adjourn

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## Wisconsin Global Warming Task Force Workgroup Template For Presentation Policy Options

1. **Workgroup:** Electric Generation & Supply Working Group
2. **Policy Name:** Transmission system expansion to support new renewables/low-emitting generation
3. **Policy Type:** Legislation amending existing transmission siting statutes, with regulatory implementation and enforcement. This policy can only impact in-state transmission projects. Coordination with other state and federal regulatory agencies is required to fully implement this policy.
4. **Affected Sectors, Sub-Sectors and/or Entities:**

Sector: Electric utility - Supply

Sub-Sector: Transmission owning companies

5. **Estimated Greenhouse Gas Emissions Reduction Impact:** Transmission access enables the use of the following options to reduce CO<sub>2</sub>:

**Dispatch WI combined cycle units before coal units** = 6.8 million metric ton CO<sub>2</sub> reduction (as soon as electric transmission system can accommodate re-dispatch and coal contracts can be adjusted). This is simply a re-dispatch of the generation units in Wisconsin, no unit retirements are assumed in this scenario.

**Canadian Hydro (500 Mw)** = 3.1 million metric ton CO<sub>2</sub> reduction (2020)

**Western Wind (500 Mw @ 40% capacity factor)** = 1.5 million metric ton CO<sub>2</sub> reduction (2020; assumes 13 years to build 345 kv reinforcements to deliver western wind resources)

**Wisconsin Wind (500 Mw @ ~~3027.5~~30% capacity factor) = 1.10** million metric ton CO2 reduction (2015-2017)

**Wisconsin Nuclear (500 Mw) = 3.1** million metric ton CO2 reduction (the later of 2020 or 10 years after repeal of nuclear moratorium or completion of a long term spent fuel storage facility if the nuclear moratorium is not repealed)

- 6. Estimated Costs:** State administrative costs will be negligible. Other material cost impacts include increased electric revenue requirements.

**Dispatch WI combined cycle units before coal units** increases fuel and O&M costs by \$338.6 million/yr (2007\$) (excludes changes in allowance costs, congestion and loss charges). The estimated cost to remove CO2 with this option is \$50/tonne (metric).

No significant investment is expected to be made in the existing Wisconsin electric transmission or natural gas transmission systems in order to allow base load operation on Wisconsin's combined cycle units and reduced operation on Wisconsin's existing coal units.

**Canadian hydro cost** – may (could be lower based on market conditions) be priced at all in cost (owning and operating) of either a new combined cycle unit or a nuclear unit. The real levelized cost of a combined cycle unit and a nuclear unit is approximately ~~\$68.269.1~~\$68.2/Mwh and \$77.1/Mwh respectively, whereas the 65%/35% coal/combined cycle energy cost is approximately \$38.9/Mwh (ties to assumption that coal/combined cycle CO2 emission rate is 1,850 lb/Mwh). In addition the transmission related costs are expected to be approximately \$74.2/Mwh (this is a very preliminary estimate and needs further analysis).

## Transmission Capacity – Low Carbon Resources – Draft 2007-09-24

Compared to only displacing energy (65%/35% coal/combined cycle energy cost, the CO2 removal cost using 500 Mw of Canadian hydro would be in the range of \$~~123124~~ – 134/tonne (metric – includes electric transmission costs). The estimated cost to remove CO2 with this option assuming the 500 Mw of Canadian hydro replaces new capacity is in the range of \$112-122/tonne (metric – includes electric transmission costs).

**Western Wind** – Western wind (40% capacity factor) real levelized capital and O&M cost (includes incremental congestion and losses between the “west” and Wisconsin) is approximately \$56.2/Mwh whereas the 65%/35% coal/combined cycle energy cost is approximately \$38.9/Mwh (ties to assumption that coal/combined cycle CO2 emission rate is 1,850 lb/Mwh). ). In addition the transmission related costs are expected to be approximately \$52.6/Mwh (this is a very preliminary estimate and needs further analysis). Compared to displacing only energy (the 65%/35% coal/combined cycle energy cost), the CO2 removal cost associated with 500 Mw of Western wind is estimated to be \$83/tonne (metric – includes electric transmission costs). The estimated cost to remove CO2 with this option assuming the 500 Mw of Western Wind replaces new capacity is estimated to be \$~~7776~~/tonne (metric – includes electric transmission costs).

**Wisconsin Wind** – Wisconsin wind (~~3027.5~~% capacity factory) real levelized capital and O&M cost is approximately \$~~75.584.2~~/Mwh. In addition the transmission related costs are expected to be approximately \$~~7.07.6~~/Mwh (this is a very preliminary estimate and needs further analysis and is highly dependent on siting). Compared to displacing only energy (the 65%/35% coal/combined cycle

## Transmission Capacity – Low Carbon Resources – Draft 2007-09-24

energy cost), the CO<sub>2</sub> removal cost associated with 500 Mw of Wisconsin wind is estimated to be \$5263/tonne (metric – includes electric transmission costs). The estimated cost to remove CO<sub>2</sub> with this option assuming the 500 Mw of Wisconsin Wind replaces new capacity is estimated to be \$4555/tonne (metric – includes electric transmission costs).

**Wisconsin Nuclear** – Wisconsin nuclear real levelized capital O&M, and fuel cost is approximately \$77.1/Mwh. In addition the transmission related costs are expected to be approximately \$4.9/Mwh (this is a very preliminary estimate and needs further analysis and is highly dependent on siting). Compared to displacing only energy (the 65%/35% coal/combined cycle energy cost), the CO<sub>2</sub> removal cost associated with 500 Mw of Wisconsin Nuclear is estimated to be \$51/tonne (metric – includes electric transmission costs). The estimated cost to remove CO<sub>2</sub> with this option assuming the 500 Mw of Wisconsin Nuclear replaces new capacity is estimated to be \$4039/tonne (metric – includes electric transmission costs).

The CO<sub>2</sub> removal cost estimates excludes:

1. Changes in fossil allowance costs.
2. The operational impacts associated with control for scenarios with large amounts of wind generation in the region.
3. Changes in congestion and loss charges that may occur due to the change in the generation/transmission topology.

7. **Specific Description of Policy Proposal:** The Public Service Commission of Wisconsin (PSCW) enforces the current administrative rules that pertain to the

site selection and construction of new transmission lines in Wisconsin.

Legislation needs to be adopted that will allow for revision to the current rules in order to:

- Streamline the transmission line permitting process.
- Allow for acquisition of transmission line right away prior to need (whether it is re-dispatch of existing fossil assets or development of new distributed renewable resources).

In addition the state needs to continue to work with neighboring states and the federal government to expedite the needed development of the transmission network in the Midwest so that Wisconsin can expand its access to high capacity factor wind resources and/or Canadian hydro generation and at the same time be vigilant that Wisconsin ratepayers do not bear an unfair portion of the development costs.

8. **Timetables, Duration and Stringency Option:** Since this policy has two tiers (intra state and interstate/federal) there are two time tables. For the intra state transmission projects the policy timetable is dependent on the Wisconsin legislative process. The timetable for the interstate/federal tier is very difficult to estimate and is affected in part by what other states will be doing to comply with existing RPS and climate change initiatives. The duration is until the law is changed. This policy should be regarded as stringent as a result of PSCW enforcement authority, subject to judicial proceedings that may strengthen landowner rights.

**Transmission Capacity – Low Carbon Resources – Draft 2007-09-24**

9. **Explanation of Rough Estimate of GHG Reductions:** The re-dispatch from coal to combined cycle unit calculations were based on reports developed by the State of Wisconsin and EIA 906/920. Standard estimates of CO2 emission rates (lb/MMBtu) and heat rates (Btu/Kwh) for coal and combined cycle generating technologies were used. The estimate of coal that could be replaced with combined cycle generation assumed at least a 40% minimum load level for coal generation at all times and 12 weeks per year at full output is required 80 hours/week for transmission/generation capacity needs. Canadian hydro, western wind and Wisconsin wind assumed that their output would replace 65% coal and 35% combined cycle output.
10. **Rough Estimate of Costs for Selected Years:** For the material costs associated with the re-dispatch of generation from coal to combined cycle the following costs were assumed:

Parameter	Coal Unit	Combined Cycle Unit
Fuel Cost - \$/MMBtu	2.0	8.0
Variable O&M - \$/Mwh	2.0	4.0

The following costs were assumed for the development of material costs associated with Canadian hydro (tied to combined cycle and nuclear unit costs) and wind resources:

Parameter	Wind	Combined Cycle	Nuclear
Capital Cost	\$2,364/kw Escalated 2010 cost	\$818/kw Overnight 2007 cost	\$3,760/kw Overnight 2007 cost
Fixed O&M	\$28.51/kw-yr 2005\$	\$8.54/kw-yr 2007\$	\$115/kw-yr 2007\$

**Transmission Capacity – Low Carbon Resources – Draft 2007-09-24**

Variable O&M	None	\$3.6/Mwh 2007\$	\$11/Mwh 2007\$
Heat Rate	None	6.68 MMBtu/Mwh	10.7 MMBtu/Mwh
Fuel Cost	None	\$8.0/MMBtu 2007\$	\$1.022/MMBtu 2014\$

The capital cost for the wind project is based on an internal capital cost estimate that reflects current market conditions.

The transmission cost estimate for the 500 Mw Canadian Hydro option is \$3,000,000,000 for 750 miles of 345 kV at \$4,000,000 per mile, where \$4M assumes both 345 kV costs and underlying high voltage upgrades.

The transmission cost estimate for the 500 Mw Western Wind option is \$1,000,000,000 for 250 miles of 345 kV at \$4,000,000 per mile (this is assumed for every 500 Mw of wind capacity).

The transmission cost estimate for the 500 Mw Wisconsin Wind option is \$ 100 million (\$200,000/Mw - this is assumed for every 500 Mw of capacity).

The transmission cost estimate for the 500 Mw Wisconsin Nuclear option is \$ 200 million (\$400,000/Mw - this is assumed for every 500 Mw of capacity. This reflects the transmission investment needed to construct new nuclear units at existing nuclear sites).

11. **Barriers to Implementation:** Landowners may strongly oppose this policy change. It could be extremely difficult to coordinate this policy with the policies of neighboring states and the federal government. The material cost impacts could cause financial harm to industries whose rates are impacted by changes in energy costs.

12. **Other Factors:** There could be duplication within the policy options (re-dispatch, Canadian hydro, wind development) mentioned that are impacted by the transmission system expansion option. For instance, the re-dispatch option could change the mix (coal and combined cycle) of the resources that are impacted by the Canadian hydro and wind options (i.e. the lb CO<sub>2</sub>/Mwh may be lower due to the re-dispatch) resulting in Canadian hydro and wind having less of an impact on CO<sub>2</sub> reduction.

Another factor that needs to be considered is the assumption related to what the rest of the world is doing regarding CO<sub>2</sub> reduction. If the rest of the world is not reducing CO<sub>2</sub>, the MISO central dispatch of the Midwest may result in Wisconsin coal generation being reduced and instead of increasing Wisconsin combined cycle generation, other Midwest coal generation could be increased resulting in increased imports into Wisconsin creating higher congestion and marginal loss costs for Wisconsin without the expected reduction in CO<sub>2</sub> emissions.

## Wisconsin Global Warming Task Force Workgroup Template For Presenting Policy Options

1. **Workgroup:** Electric Generation Workgroup
2. **Policy Name:** Advanced Renewable Tariffs (10-year fixed price tariffs to stimulate the deployment of renewable generation projects under 15 MW).
3. **Policy Type:** Definitely a PSC proceeding. Authorizing legislation may be necessary.
4. **Affected Sectors, Sub-Sectors and/or Entities:** Public Service Commission, utilities, customer-generators, independent power producers, renewable energy installation contractors and equipment manufacturers.
5. **Estimated Greenhouse Gas Emissions Reduction Impact:** If utilities supplied 2% of their sales with distributed renewable resources by 2020 (above current requirements), and 3% by 2025, this would result in reductions of 1.5 million tons/yr by 2020, and 2.25 million tons/yr by 2025.

### 1. Estimated Greenhouse Gas Emissions:

Effect of Advanced Renewable Tariffs on Wisconsin Renewable Electricity Supply in million MWh for given growth rates (based on 2003 WI electricity sales of 67.2 million MWh).

Annual Growth Rate From 2003:	0%	1%	1.5%	2.1%
Current Law (10%)	6.7	7.6	8.0	8.6
10 +1 % (2015)	7.4	8.4	8.8	9.5
10 +2% (2020)	8.0	9.6	10.4	11.4
10+ 3% (2025)	8.7	10.7	12.1	13.8

Emissions Avoided by Advanced Renewable Tariffs (U.S. tons of CO<sub>2</sub>-eq) using WI average recent fleetwide emissions of 1850 Lbs CO<sub>2</sub>-e/MWh and assuming zero emissions from all RPS generation.

Annual Growth Rate From 2003:	0%	1%	1.50%	2.13%
Base Emissions With No RPS	43,100,000			68,800,000
Current Law (10%)	5,272,500	6,567,500	7,400,000	8,417,500
10 + 1% (2015)	5,325,225	7,296,492	8,262,100	9,456,472
10 + 2% (2020)	5,378,477	7,774,777	8,847,263	10,189,079
10 + 3% (2025)	5,432,262	8,284,414	9,473,870	10,978,442

6. **Estimated Costs:** Rising from \$5 million/yr in 2009, annual costs peak at \$33.million/yr in 2018, and decline to \$15 million/yr by 2025. At its maximum, the overall rate impact is less than 0.5% of gross utility revenues.

7. **Specific Description of Policy Proposal:** The advanced renewable tariff proposal has two elements: (1) a requirement ~~that the PSC establish on utilities to offer~~ advanced renewable tariffs that are uniform across utility service territories to qualifying generators ~~within their service territories~~; and (2) a gradually rising ceiling under which utilities set of goals for increasing the contribution of distributed renewable generation relative to their a utility's system mix retail sales. Proposed Suggested ceiling goals are 1% by 2015, 2% by 2020 and 3% by 2025.

For the purposes of this proposal, advanced renewable tariffs are 10-year fixed-rate tariffs pegged at the generation source's production costs in Year 1. These technology-specific tariffs would be uniform across utility boundaries. Unless the price of conventional fuel declines, the margin between the advanced renewable energy tariff and the utility's avoided cost will narrow during the 10-year period.

When the 10-year term ends, the utility can purchase that energy at its avoided-cost based rate. Utilities would have the option of rate-basing these generation sources or reselling some or all of the electricity acquired through these tariffs through their voluntary renewable energy programs, as We Energies' current practice with its special solar tariff.

Utilities that establish Advanced Renewable Tariffs are purchasing not only the energy from qualifying generators but also the renewable energy credits that are created. A utility may apply generation purchased under these tariffs toward its current Renewable Portfolio Standard or any successor renewable energy obligation, unless the output is resold through a voluntary renewable energy program at retail. After the 10-year fixed rate tariff ends for a particular generator, a utility may continue to apply that generation toward any successor renewable energy requirement.

8. **Timetables, Duration and Stringency Option:** If the PSC believes it has the authority it has the authority to establish advanced renewable energy tariffs without legislation, it could convene a proceeding at any time to determine the production costs of various distributed renewable resources such as solar, wind, small hydro, landfill gas, biogas, and other biomass sources. To achieve a 2% target by 2020, utilities would, in the aggregate, need to purchase 1.5 billion kWh per year of qualifying generation through these rates by 2020. To achieve a 3% target, the utilities would need to purchase another 750 million kWh/year. Spread out over a 17-year period beginning in 2009, annual increases would average between 100 and 150 million kWh.

9. **Explanation of Rough Estimate of GHG Reductions:** The 2020 estimate assumes the displacement of 1.5 billion kWh/yr of conventional generation with carbon-free or carbon-neutral generation. The 2025 estimate assumes the addition of 750 million kWh/yr on top of the quantity leveraged by the 2020 target. It is assumed that 1 billion kWh of carbon-free or carbon-neutral generation in Wisconsin will result in a reduction of 1 million metric tons of CO<sub>2</sub> from the electrical sector.
10. **Rough Estimate of Costs for Selected Years:** The cost per unit of electricity acquired would be highest in 2009 (Year 1) (approximately 5 cents/kWh). The overall cost per year will increase from Year 1 until it reaches a peak of \$33 million/year in 2018 (Year 10). It will then decline each year to \$15 million/yr in 2025. In the cost estimate below, it is assumed that the marginal difference between energy purchased through an advanced renewable tariffs and energy purchased through the standard parallel generation rate will decline by 0.25 cents per year. Note: these numbers reflect nominal values and do not take inflation into account.

<u>Year</u>	<u>Amount</u>	<u>Incremental Margin</u>	<u>Annual Cost</u>
2009	100,000,000 kWh	5 cents/kWh	\$5,000,000
2010	200,000,000	4.75	\$9,500,000
2011	300,000,000	4.50	\$13,500,000

2012	400,000,000	4.25	\$17,000,000
2013	500,000,000	4.0	\$20,000,000
2014	600,000,000	3.75	\$22,500,000
2015	750,000,000	3.50	\$26,250,000
2016	900,000,000	3.25	\$29,250,000
2017	1,050,000,000	3.0	\$31,500,000
2018	1,200,000,000	2.75	\$33,000,000
2019	1,350,000,000	2.50	\$31,250,000
2020	1,500,000,000	2.25	\$29,250,000
2021	1,650,000,000	2.00	\$27,000,000
2022	1,800,000,000	1.75	\$24,500,000
2023	1,950,000,000	1.50	\$21,750,000
2024	2,100,000,000	1.25	\$18,750,000
2025	2,250,000,000	1.00	\$15,000,000

11. **Barriers to Implementation:** It is not clear whether legislation would be required to provided the PSC with the authority to set advanced renewable tariffs and impose targets on utilities.
12. **Other Factors:** The Wisconsin Distributed Resources Collaborative (WIDRC) has spearheaded a voluntary effort to develop a consensus proposal for establishing Advanced Renewable Tariffs. This group has been meeting steadily on this issue since early 2006 to work out various methodological and economic issues associated purchasing renewable electricity from customer-generators. The current proposal before the body recommends a biogas tariff of 10 cents/kWh for

systems up to 500 kW, and nine cents/kWh between 500 kW and one megawatt. This initiative has prompted two separate utility proposals this year to establish technology-specific tariffs, and they are both under consideration by the PSC. One, offered by Madison Gas & Electric, would buy back solar-generated electricity from its customers at a rate of 25 cents/kWh. The other, ~~proposed~~ ~~by~~from Xcel-Northern States Power, proposes a biogas rate of 7.3 cents/kWh and a wind energy rate of 6.6 cents/kWh. It is interesting to note that while these proposed tariffs are higher than the utilities' respective parallel generation rates, they are below the production costs of the technology to be incentivized. Their success in stimulating customer-sited distributed renewable generation wholly depends on other financial support external to the utility tariff, such as federal tax credits and Focus on Energy incentives.

## Wisconsin Global Warming Task Force Workgroup Template For Presenting Policy Options

1. **Workgroup:** Utility Generation Workgroup
2. **Policy Name:** Windpower Permitting Reform
3. **Policy Type:** Legislation and PSC rulemaking
4. **Affected Sectors, Sub-Sectors and/or Entities:** Public Service Commission, utilities, counties, municipalities and towns, wind energy industry.
5. **Estimated Greenhouse Gas Emissions Reduction Impact:** 925,000 tons/yr reduction by 2015, 1.387,500 tons/yr reduction by 2020, and 1.85 million tons/yr by 2025.
6. **Estimated Costs:** No cost to utilities. With more project applications to review, an increase in the PSC's workload is likely, which may result in additional administrative expenses. However, siting reform is likely to reduce costs borne by developers in dealing with local opposition, including increases in installation costs caused by permitting delays as well as direct litigation costs.
7. **Specific Description of Policy Proposal:** Legislation would contain the following elements: (1) definitions of large and small wind energy systems; (2) a requirement on the PSC to draft uniform standards for siting large and small wind energy systems; (3) creation of an optional process for PSC review of projects under 100 MW that have large wind energy systems; (4) a mechanism for allowing parties to appeal a decision rendered by a local jurisdiction to the PSC; (5) extending Chapter 227 judicial review provisions to wind projects permitted by local jurisdictions, including the ability to appeal a decision under 100 MW;

and (6) a prohibition on local ordinances restricting meteorological test towers. These provisions would essentially require the PSC to promulgate standards for local review, such as setback distances and sound output, and apply them to both agency-reviewed projects as well as those reviewed by local land use authorities.

The new rules adopted by the Commission for wind projects under 100 MW would be less rigorous than what is required under the CPCN process. The developer should not be required to demonstrate need, nor should the developer be required to present an alternative site as part of the permit application.

8. **Timetables, Duration and Stringency Option:** Once the legislation is enacted, the PSC would have a specified period of time to adopt emergency rules establishing uniform standards for permitting wind projects. These standards would apply to PSC-reviewed wind projects as well as those reviewed by local jurisdictions. These rules would remain in effect indefinitely.
9. **Explanation of Rough Estimate of GHG Reductions:** The 2015 estimate is based on the assumption that 4040 MW of windpower would be placed in service in Wisconsin that otherwise would not have been built due to restrictive ordinances adopted by local jurisdictions to placate opponents to a specific wind project—. Between the wind ordinances in Manitowoc, Door and Shawano counties and the Town of Stockbridge (Calumet County) and the moratoria in Calumet and Trempealeau counties and the Town of Glenmore (Brown County), at least 300 MW of wind projects currently under development are subject to local restrictions that prevent them from going forward. Four hundred ~~forty~~ MW of windpower operating at a capacity factor of 296% should produce one million

MWH per annum, which in turn should reduce emissions by 925,000 tons a year.

I conservatively estimate that another 4,040 MW of windpower will be built on Wisconsin land between 2015 and 2025, with half of that to occur by 2020. I am optimistic that additional wind capacity will be built in the waters off Wisconsin. However, it is unclear whether the PSC would have permitting authority over generation projects built in the Great Lakes, so I cannot provide attribute GHG reduction savings from offshore wind development to this policy.

Emissions Avoided by Reforming Wind Energy Permitting Process (U.S. tons of CO<sub>2</sub>-eq) using WI average recent fleetwide emissions of 1850 Lbs CO<sub>2</sub>-e/MWh and assuming zero emissions from all wind generation.

Year	Annual Output (in MWh)	Emissions Savings
2015	1,000,000	925,000
2020	1,500,000	1,387,500
2025	2,000,000	1,850,000

10. **Rough Estimate of Costs for Selected Years:** The savings from reduced preconstruction costs should outweigh any additional costs to the PSC from any increase in the number of wind project applications to review.
11. **Barriers to Implementation:** The only barrier to adoption would be political will, or lack thereof, at the state level.
12. **Other Factors:** The wind energy siting reform proposal tracks closely with the large livestock siting law adopted two years ago.

	Policy drafts for 8/27	Policy drafts for 9/10	Policy Drafts for 9/18	Policy Drafts for 9/26
Off-shore wind	<a href="#">JLC (assessment of off-shore wind)</a>			
PSC DNR Award for Clean Utility	<a href="#">JLC (rate incentive-PSC DNR award for cleanest utilities)</a>			
Rate Incentives - CO2 Adder	<a href="#">JLC (v2-changes to rate incentive-CO2 adder to cost of energy)</a>			
Rate - Market Based for Renewables	<a href="#">JLC (v2-changes to rate incentive-market based options for renewable energy)</a>			
Solar Energy Certificate	<a href="#">JLC (v2-changes to solar energy certificate program)</a>			
Tax Deductions for Renewables	<a href="#">JLC (v2-changes to tax deductibility of renewable energy payments)</a>			
RPS	<a href="#">JLC (v2-changes to Wisconsin global warming task force workgroup template for presentation policy options)</a>	<a href="#">Bender - Wisconsin Global Warming Task Force Workgroup RPS Draft 2</a>		
Advanced Renewable Tariff	<a href="#">Vickerman - GWTF Advanced Renewable Tariff Summary</a>	<a href="#">Vickerman - GWTF Advanced Renewable Tariff Summaryv2</a>		<a href="#">GWTF Advanced Renewable Tariff Summaryv3</a>
Feed-in Tariffs	<a href="#">Vickerman - GWTF Feed-in Tariffs Policy</a>			
Wind Siting Reform	<a href="#">Vickerman - GWTF Wind Siting Reform Policy Proposal</a>	<a href="#">Vickerman - GWTF Wind Siting Reform Policy Proposalv2</a>		<a href="#">GWTF Wind Siting Reform Policy Proposalv3</a>
Nuclear	<a href="#">Raschka - Wisconsin Global Warming Task Force Workgroup Template For Policy Options - Nuclear Moratorium</a>	<a href="#">Kellen - Nuclear Policy Draft adk 9-7-07</a>		
Cost Methodology and Transmission Support	<a href="#">Smies - EG&amp;S - Trans Expand Low CO2 Sources</a>	<a href="#">Smies - EGS Trans Expand - Low CO2 Sources - 20070904 red</a>	<a href="#">EGS Trans Expand - Low CO2 Sources - 20070913 red</a>	<a href="#">EGS Trans Expand - Low CO2 Sources - 20070924 red</a>
Carbon Performance Standards	<a href="#">Turnure - WI-GWTF Draft Policy Option Template Carbon Performance Standard</a>			
T & D Losses	<a href="#">Matthews - Transmission and Distribution Improvements</a>			
Combined Heat and Power	<a href="#">Matthews - Combined Heat and Power (2)</a>		<a href="#">Matthews - Combined Heat and Power-Sep 17</a>	
Carbon Capture	<a href="#">Taglia - Carbon capture and storage opportunities for Wisconsin</a>			
Environmental Trust Financing			<a href="#">Kellen - Elec Rate Strategies Discussion Paper - 9-12-07</a>	
Please refer to DNR website for complete description of policies by meeting date				