Review of EPA's Proposed Clean Power Plan Impact on Otter Tail Power Company

North Dakota Public Service Commission

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Otter Tail Power Company

Otter Tail Power Company provides reliable, low-cost electricity and 785 jobs in eastern North Dakota, west central Minnesota, and the northeast corner of South Dakota.

- OTP operates three coal plants:
  Coyote Station (35% owner)
  Big Stone Plant (53.9% owner)
  Hoot Lake Plant (100% owner)
- Hoot Lake Plant is planned to be retired in 2020.
- Customer base:
  44% ND, 47% MN, 9% SD
- OTP's median size town in ND is Mercer (population 94)

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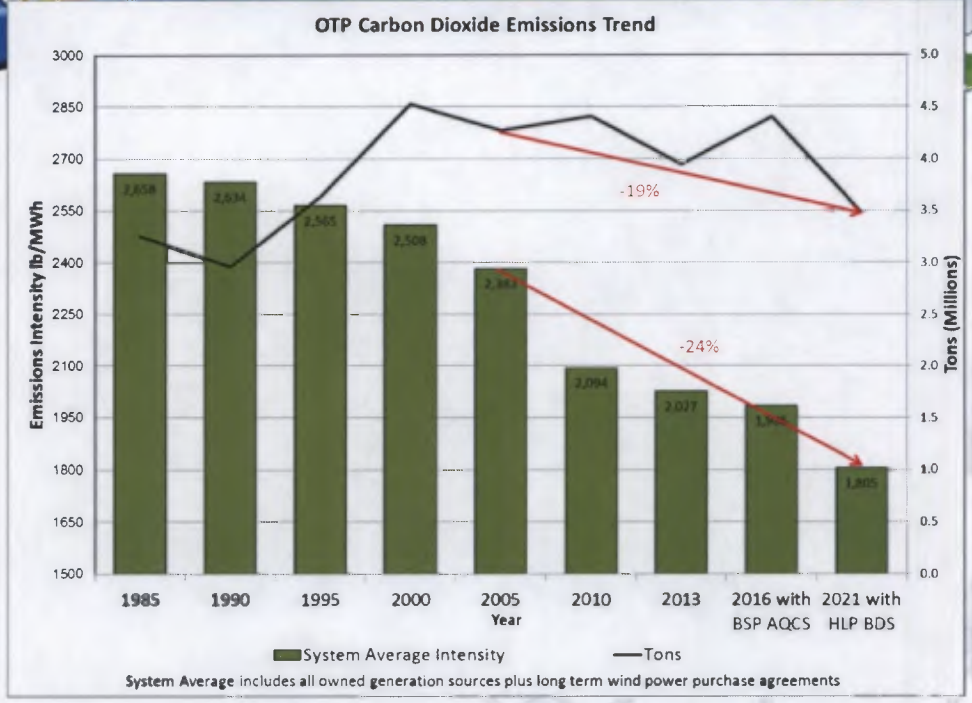
Big Stone AQCS Project update:

- Safety: 1,100,000+ hours worked, 0 lost-time injuries, 3 recordable incidents, OSHA rate 0.6
- Budget: Original budget $491M
  Current budget $384M
- Schedule: On track for summer 2015 start-up
- Construction: 60% complete, approximately 425 workers on site

Clean Power Plan

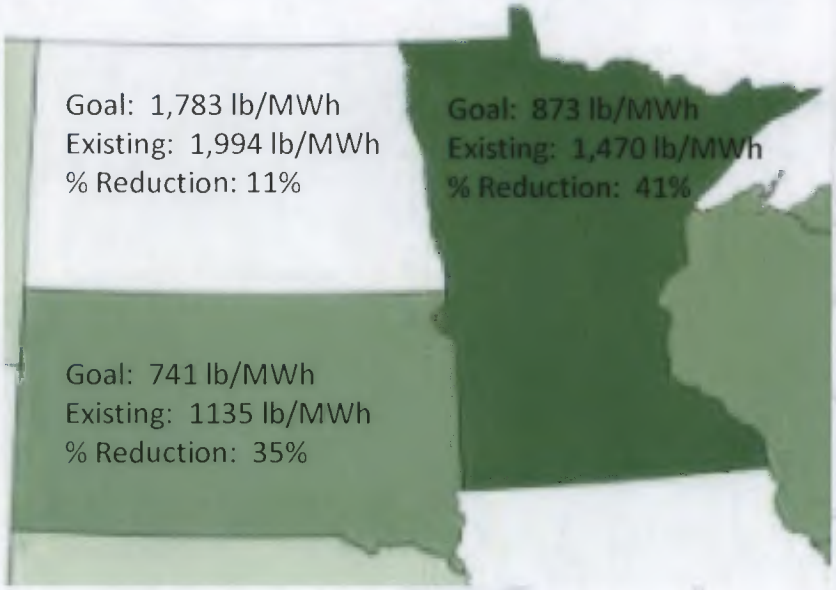
- Proposal was released on June 2, 2014 and published in the Federal Register on June 18. Comments are due Oct. 16.
- EPA Headlines:
  - This rule strives to lower carbon emissions from existing power plants by setting state-specific carbon dioxide emission goals on a rate basis (CO2 emissions per MWh) that must be achieved by the Year 2030.
  - The final state goals, if converted from rate (lb CO2/MWh) to mass (tons CO2) and aggregated at a national level, will achieve by 2030 an approximate 30 percent reduction of power sector CO2 emissions from 2005 levels.



- The year 2005 is a public relations talking point. Instead, the proposed CO2 reductions are predicated upon a combination of four building blocks considered the Best System of Emission Reduction (BSER) applied on a state-by-state basis:

Building Block #	Building Block	Proposed
1	Heat Rate Improvement in Coal Fleet	6% from 2012
2	Re-dispatch existing and under construction NGCC	70% CF
3	Renewable Energy	15% for North Central Region
4	Demand Side Energy Efficiency	1.5%

EPA Clean Power Plan:
Existing Source Guidelines – Clear Air Act Section 111 (d)



Building Block 1:

EPA Proposal:

2012 ND Coal CO2 Intensity (lb/MWh)	2030 ND Coal CO2 Intensity with 6% HRI
2,368	2,226

EPA cites a Sargent and Lundy report that a 2% improvement can be made through plant upgrades, including four "higher cost" projects:

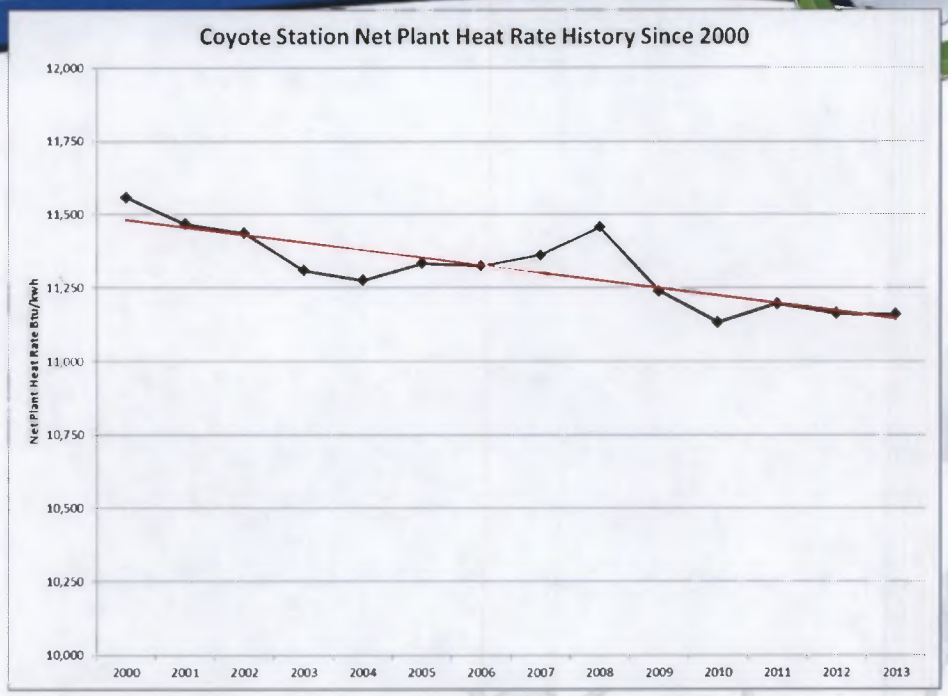
- Economizer Replacement
- Air Preheater Improvements
- Combined VFD and Fan
- Turbine Overhaul

(Citation: EPA GHG Abatement Measures TSD page 2-35)

EPA believes that 4% improvement can be found through best operating practices, such as:

- Turning off unneeded pumps at reduced load
- Installing digital control systems
- More frequent tuning of existing control systems
- Earlier like-kind replacement of worn components

(Citation: Fed Register page 34860)



Otter Tail Power Company Position – Building Block 1

- EPA's application of building block 1 is technically infeasible.
- EPA must properly recognize heat rate improvement projects that have already been performed.
- Coyote Station has a proud history of using "best operating practices" to already optimize net plant heat rate.
- EPA overlooks that other rules are forcing the installation of pollution control equipment which will negatively impact heat rate.
    - Big Stone Plant is investing nearly $400 million to install pollution control equipment in 2015 to comply with EPA's Regional Haze Rule, which will add approximately 8 MW of station service.

Building Block 2:

EPA Proposal:

	2012:		2030:	
	Coal Net Gen MWh	**NGCC** Net Gen MWh	**Coal** Net Gen MWh	**NGCC** Net Gen MWh
MN	22,000,000	5,715,000 (24% CF)	10,700,000	17,021,000 (70% CF)
ND	28,187,000	0	28,187,000	0
SD	2,923,000	27,096 (1% CF)	958,000	1,992,000 (70% CF)

- 958,000 MWh is equivalent to a 23% capacity factor for Big Stone Plant, the one coal plant in South Dakota.
- South Dakota's one NGCC plant, Deer Creek Station, commenced operation in late 2012.

Building Block 2: Key Facts

Big Stone Plant

- Each of the co-owners rely on the capacity and energy from BSP for all 12-months of the year to reliably and economically serve load.
- Since the minimum operating load of BSP is approximately 40% of max output, a 23% capacity factor would require the unit to be offline at least half the year.
- The unit operates within the MISO centralized market.

Deer Creek Station

- The unit serves the capacity and energy needs of Basin Electric.
- The unit operates in the Integrated System (IS) and will join the Southwest Power Pool centralized market in 2015.

Building Block 2: Key Facts

- Re-dispatch between two units is achievable if owned by the same party, serve the same load, or are within the same commitment and dispatch processes (i.e. the same RTO).
- Re-dispatch can be accomplished by adding an economic penalty factor to the unit costs.
- However, none of those conditions apply to the scenario in South Dakota. In fact, BSP and BEPC:
  - Have no contractual relationship.
  - Serve unique loads and no firm transmission rights exist from Deer Creek to BSP owner loads.
  - Are committed and dispatched by two separate entities with unique commitment and dispatch processes.

Otter Tail Power Company Position – Building Block 2

- Building Block 2 is technically infeasible and should not be applied to South Dakota.
- Notwithstanding the dispatch concerns above, Building Block 2 is flawed by Deer Creek not beginning operation until late 2012, resulting in an unrepresentative 1% capacity factor.
  - In this case, Deer Creek should have been considered an "under construction" unit in the SD target calculation.
- Big Stone Plant is investing nearly $400 million to install pollution control equipment in 2015 to comply with EPA's Regional Haze Rule – this investment must not be jeopardized.

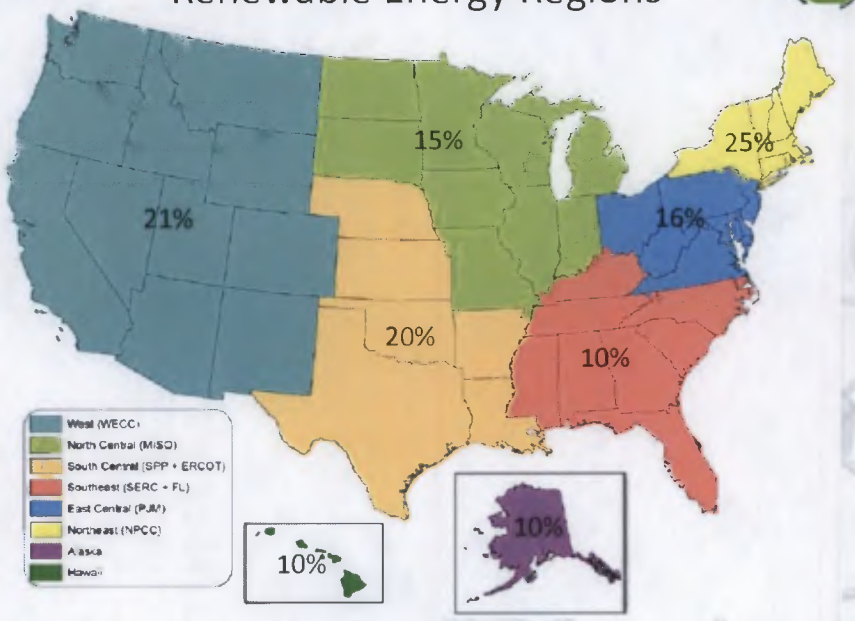
Building Block 3:

EPA Proposal:

	2012 State Generation MWh	Renewable Energy Target %	Renewable Energy Target MWh
MN	52,194,000	15%	7,889,000
ND	36,125,000	15%	5,460,000
SD	12,034,000	15%	1,818,150

- EPA's 15% target is the average of binding renewable portfolio standards in the North Central Region.
- Existing, non-hydro, renewables can be counted towards the target or any new renewables (including new hydro).

Renewable Energy Regions



Otter Tail Power Company Position – Building Block 3

- The transferability of Renewable Energy Credits (RECs) has been a major topic of discussion.
- EPA clearly calculated state goals based on the energy from all generating plants located in the state staying in the state; these goals must be re-calculated if EPA allows RECs to move out of state.
- If EPA allows RECs to move, but not fossil generation, this will create an inconsistency in which wind energy will be exported from the Dakota's but not the coal energy that is also relied upon by the importing state.

Building Block 4

EPA Proposal:

- EPA's preferred option sets an annual 1.5% demand side savings goal, ramping up to that goal beginning in 2017.

	2017	2018	2019	2020	2021	2022	2023	2024	2025-
MN	1.08%	1.28%	1.48%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
ND	0.07%	0.27%	0.47%	0.67%	0.87%	1.07%	1.27%	1.47%	1.50%
SD	0.13%	0.33%	0.53%	0.73%	0.93%	1.13%	1.33%	1.50%	1.50%

Otter Tail Power Company Position – Building Block 4

- EPA's proposal uses an understandable methodology and approach to determining goals.

But.....

- EPA is attempting to set aggressive goals that may not be achievable.
- Goals will cost significant dollars and resources to achieve.
  - Utilities' and regulators' resources will be stressed.
- EPA intends to develop guidance on acceptable EM&V methods and technical resources.
  - ND may want to weigh in on acceptable alternatives that work.

Multi-State Plans

- The wide differences between the proposed state targets in the three states that OTP operates creates a high hurdle for entering into a multi-state collaboration.
- However, OTP anticipates there may be significant changes from the proposed rule to the final rule, so it is important to continue to be engaged with other states.
- The benefits of a multi-state plan include:
  - An extension to submit a 111(d) plan to EPA until June 30, 2018 (although more time is likely needed)
  - Potentially more favorable economics in siting future generation
  - Synergies with utility portfolios that serve customers in multiple states

Multi-State Plans

- If a final 111(d) rule allows only RECs to follow load, it may be critical to OTP for North Dakota and South Dakota work together.
- OTP encourages all stakeholders to focus on submitting comments during this important time-period that goes through October 16, 2014.

Thank you

Cost to replace Big Stone Plant

- Assumptions –

- 475 MW combined cycle natural gas
- 80% capacity factor for new CC
- Retirement date for BSP: 2025
- 5-year recovery period for remaining net book value

Cost to replace Big Stone Plant

	(Millions)
• Annual capital cost – new CC	$38.4
• Annual marginal fuel cost	$17.9
• Annual recovery of remaining BSP net plant	$35.8
Total	$92.1
Approx. % increase in rev. req.	19.8%
Approx. annual rate impact to ND residential customer (1,000 kwh)	$200