

STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION

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In the Matter of Otter Tail Power's 2014-
2028 Integrated Resource Plan

MPUC Docket No. E017/RP-13-961

PUBLIC COMMENTS OF IZAAK WALTON LEAGUE – MIDWEST OFFICE, FRESH
ENERGY, SIERRA CLUB, AND MINNESOTA CENTER FOR
ENVIRONMENTAL ADVOCACY

I. INTRODUCTION

The Izaak Walton League of America – Midwest Office, Fresh Energy, Sierra Club, and Minnesota Center for Environmental Advocacy (“Environmental Intervenors”) respectfully submit these initial comments on the Otter Tail Power Company (“OTP”) 2013 Integrated Resource Plan (“IRP”). Although there are no resource additions planned in the next five years, the Environmental Intervenors are concerned with the Resource Plan’s failure to attempt to achieve compliance with the recently enacted Solar Energy Standard¹ (“SES”) or Minnesota’s Greenhouse Gas (“GHG”) emissions reduction goals.² Consideration of how a utility plans to meet these standards must be included as part of a statutorily required public interest determination for any Resource Plan that includes a new or refurbished facility.³

In addition to the fact that the preferred plan does not comply with these standards, there are several modeling assumptions that have created a bias against using renewable energy sources as opposed to natural gas to meet the anticipated future needs. Environmental

¹ Minn. Stat. § 216B.1691, subd. 2f (Supp. 2013).

² Minn. Stat. § 216H.02, subd. 1 (2012).

³ Minn. Stat. § 216B.2422, subd. 4 (Supp. 2013).

Intervenors argue that if these modeling assumptions were corrected, the bias against renewables would be removed, which would potentially allow for OTP to add solar resources in the future to meet the needs of its customers while working toward compliance with both the SES and the state's GHG emission reduction goals. Finally, there is a fundamental lack of reliability in OTP's load forecast methodology that undermines the conclusions and, ultimately, the selection of the preferred plan.

II. THE PUBLIC INTEREST DETERMINATION MUST INCLUDE CONSIDERATION OF COMPLIANCE WITH THE SES AND GHG EMISSION REDUCTION GOALS

The Commission is prohibited from approving "a new or refurbished nonrenewable energy facility" in an IRP unless the utility first demonstrates that a renewable energy facility is not in the public interest. This public-interest determination must include "whether the resource plan helps the utility achieve the greenhouse gas reduction goals under section 216H.02, the renewable energy standard under section 216B.1691, or the solar energy standard under section 216B.1691, subdivision 2f." Minn. Stat. § 216B.2422, subd. 4 (Supp. 2013).

In response to this statutory mandate, the Commission has stated that it "expects utilities to include in their resource plans filed after August 1, 2013 an explanation [sic] how the resource plan helps the utility achieve the greenhouse gas reduction goals, renewable energy standard, and solar energy standard as listed in the above-referenced legislation. Parties should also be prepared to discuss the matter in comments."⁴ OTP's 2013 IRP includes the addition of a new nonrenewable energy facility in 2021 (a natural gas plant), so the Commission cannot approve OTP's IRP unless OTP first demonstrates that a renewable energy facility is not in the public interest.

⁴ State of Minnesota Public Utilities Commission, *Notice of Information in Future Resource Plan Filings*, issued August 5, 2013.

A. The Preferred Plan Does Not Meet The State's Greenhouse Gas Emissions Reductions Goal.

Minnesota Statutes § 216H.02 states: "It is the goal of the state to reduce greenhouse gas emissions to a level of at least 15 percent below 2005 levels by 2015, to a level at least 30 percent below 2005 levels by 2025, and to a level at least 80 percent below 2005 levels by 2050." OTP will not meet these goals if its preferred plan is selected.

In response to Information Request Number 1 by the Department of Commerce, OTP indicated that it will have reduced CO₂ emissions by 19% in 2015 and by 22% in 2025. These numbers are misleading, however. As Table 1 in OTP's response indicates, these reductions are reductions in carbon intensity, or tons of CO₂ emitted per MWh. It is not a reduction in CO₂ emissions. The actual reduction in CO₂ emissions in 2015 based on the preferred plan is only 9% and in 2025 it is only 6%. Further, even if carbon intensity were a proper measure of whether a utility is meeting a GHG reduction goal, the 22% reduction by 2025 falls short of the statutory GHG emissions reduction goal. A more accurate depiction of OTP's failure to meet the GHG emissions reduction goals is contained in Figure 5-12 of the 2013 IRP, which demonstrates OTP's failure to comply with GHG emission reduction goals based on annual tons of CO₂ emitted. Figure 5-12 shows that OTP fails to meet the 15% GHG reduction goal in 2015 if purchased power is included, and will not meet the 30% reduction goal in 2025 regardless of whether purchased power is included.

Even though not selected as its preferred plan, OTP did conduct an analysis of a scenario that would meet the 2025 GHG emissions reduction goal. "Sensitivity No. 21," which would meet the goal, was \$39 million or 0.8 percent more expensive than the base case plan.⁵

⁵ Sensitivity No. 21 cannot be compared to OTP's preferred plan because its preferred plan was created without regard to externalities or CO₂ prices.

Differences of less than 1 percent between Present Value Revenue Requirements are generally not considered significant. In order to conclude that OTP sufficiently demonstrated that a renewable facility is not in the public interest, therefore, the Commission would need to find that a 0.8 percent cost difference is significant enough to justify approving a plan that does not meet the state's GHG reduction goals.

B. The Preferred Plan Will Not Comply With The Solar Energy Standard.

With respect to why solar is not included, OTP states that “The preferred plan does not select solar resources as part of its least cost plan. The Company included 12 solar compliance sensitivities . . . , which included modeling solar purchased power agreements at different price levels to determine the impact of meeting the solar RES.”⁶ But, as discussed below, OTP's analysis of solar resources is flawed, which makes meeting the SES appear more costly than it is. OTP must consider compliance with the SES as part of the public interest determination. For the Commission to approve an IRP that contains no solar⁷ even after the SES is in place would require a significant showing of why solar is not in the public interest and the flawed modeling in OTP's IRP does not meet this threshold.

III. OTP'S MODELING IS UNNECESSARILY BIASED IN FAVOR OF NATURAL GAS

A. OTP's Modeling Creates A Bias Against Solar.

While OTP's preferred plan does not include the solar resources necessary to meet the SES, it is clear that its solar energy assumptions bias the modeling against solar energy. The base

⁶ OTP 2013 IRP § 5-4.

⁷ OTP's five-year action plan indicates that in 2018 it will “[i]nitiate work on [a] utility-scale solar project to meet the Minnesota Solar Mandate by 2020,” but this appears to be the only mention of such a project.

cost assumption used for modeling purposes is \$133 per MWh for a 77 kW solar array.⁸ Using the National Renewable Energy Laboratory's mean installed cost⁹ for a 1-10 MW system as of August 2013 and assuming a 30 percent solar Investment Tax Credit ("ITC"), we have calculated a levelized cost of \$115 per MWh for a 1 MW facility. The primary difference between our calculation and the indicative pricing that OTP has received seems to be whether the 30 percent ITC is included or not. An important window of opportunity for OTP to most cost-effectively install solar power is coming to a close. The solar Investment Tax Credit will reduce from 30 percent to 10 percent of eligible property at the end of 2016. Projects must come online prior to that date in order to qualify. Given this, as well as information coming out of recent dockets in Minnesota, OTP's base solar price appears to be too high.

In addition, OTP modeled solar in 1 MW blocks and assumed that twenty-one blocks would be needed to meet OTP's solar obligation in 2020. Despite needing twenty-one blocks, there is no economy of scale built into OTP's cost assumption. It is unrealistic to assume that there will be no decrease in cost as the number of installations rises.

Finally, because OTP's cost escalates 3 percent per year, the real cost of solar is assumed to be rising throughout the study period.¹⁰ This is contrary to recent experience and to expectations regarding solar prices. Solar prices have come down dramatically over the past few years. For example, the National Renewable Energy Laboratory has collected data showing that crystalline silicon modules have fallen in cost from over \$4 per watt in 2008 to \$.84 per watt in late 2013/early 2014.

⁸ OTP's Response to MCEA Information Request No. 002, Public Version, dated February 10, 2014.

⁹ Available at http://www.nrel.gov/analysis/tech_lcoe_re_cost_est.html.

¹⁰ Though we interpret OTP's base case solar price of \$133 per MWh as a nominal figure and the 3 percent escalation as also nominal, this would still result in an increase in the real price of solar given that inflation is expected to be less than 3 percent.

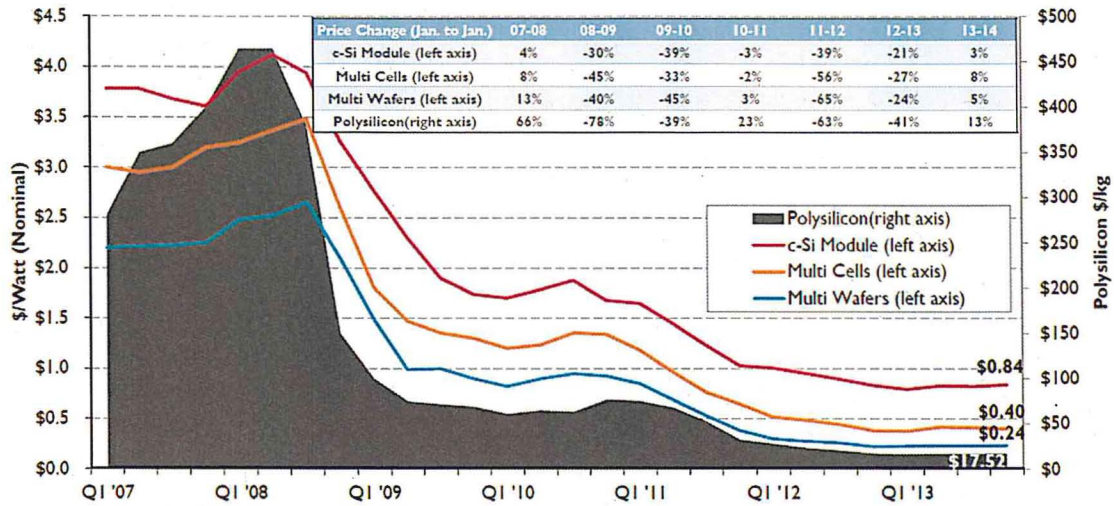


Figure 1. PV Module and Component Spot Pricing¹¹

Near-term expectations are that solar prices will continue decline, though perhaps not at the pace experienced in the last few years.

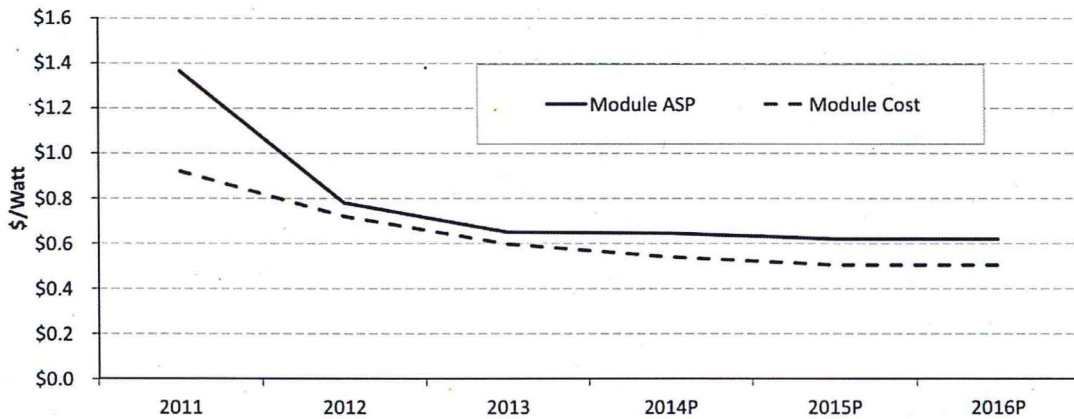


Figure 2. Near-Term Price/Cost Projections¹²

Given these facts, OTP should have modeled solar resources at a steady or even declining price.

Another bias against solar in OTP’s modeling is the assumption that solar can be accredited at only 40 percent of its nameplate value. OTP has offered no basis for this

¹¹ Feldman, David. “Solar Industry Update.” March 18, 2014.

¹² *Id.*

assumption.¹³ Studies looking at the capacity value of solar using a Loss of Load Probability (“LOLP”) approach have consistently accredited solar at much higher percentages. These studies are summarized in Figure 3.

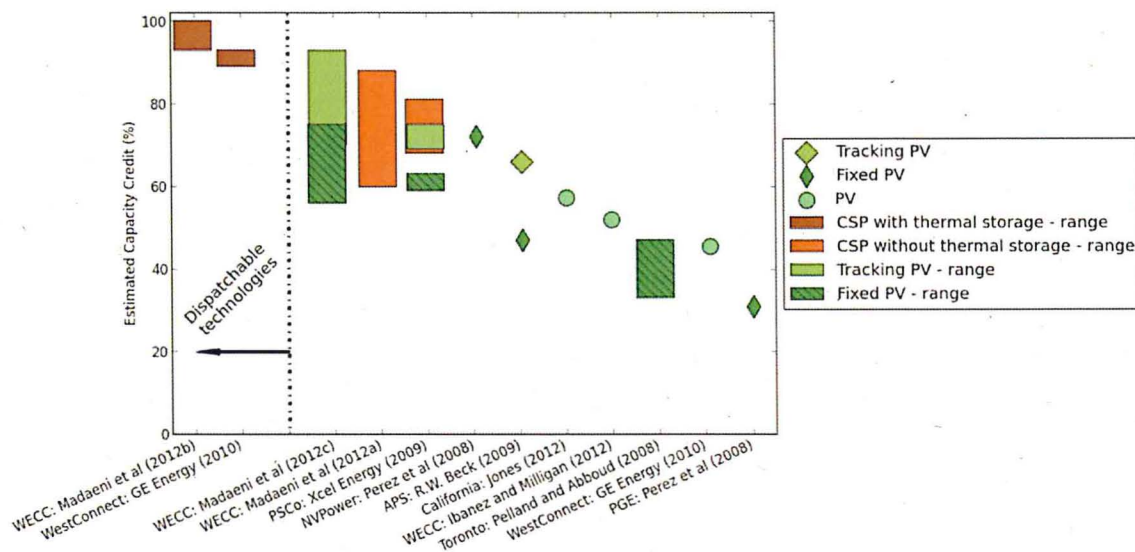


Figure 3. Capacity Credit at Low Solar Penetration from LOLP-Based Studies¹⁴

OTP’s generic solar resource is assumed to be a tracking array. Tracking arrays are represented in Figure 3 with the light green diamonds and rectangles and the capacity credit of tracking systems exceeds 60 percent in all the studies listed in Figure 3—much higher than OTP’s assumed 40 percent. Clearly the specifics of any individual facility matter, but a recent Minnesota estimate is much more in line with the studies summarized in Figure 3 than with OTP’s figure. For example, in Docket No. E002/CN-12-1240, R. Thomas Beach presented testimony on behalf of Geronimo Energy showing that its distributed solar proposal could be expected to be accredited at about 71 percent of its nameplate capacity value.¹⁵

¹³ See OTP’s Response to MCEA Information Request No. 2.

¹⁴ Mills, Andrew and Ryan Wiser. “Solar Valuation in Utility Planning Studies.” January 2013.

¹⁵ Beach, R. Thomas, Direct Testimony dated September 27, 2013 at 13.

The combination of high solar cost, real price increases, and undervaluing of solar capacity have biased OTP's modeling against solar resources and make complying with the SES appear to be more costly than it is likely to be.

B. OTP's Modeling Creates A Bias Against Wind.

There are also modeling assumptions that either create a bias against wind or unrealistically favor natural gas in OTP's Resource Plan. First, there are price assumptions with respect to wind that do not reflect reality. OTP modeled wind resources at \$45 per MWh escalating at 3 percent per year. As with solar, this results in a real increase in price because inflation is expected to be less than 3 percent per year. In addition, the price of existing wind facilities on OTP's system is [TRADE SECRET BEGINS... ...TRADE SECRET ENDS] than OTP's generic price. Although we believe this is partially due to [TRADE SECRET BEGINS...

...TRADE SECRET ENDS] Figure 4 shows how this difference magnifies over time. [TRADE SECRET BEGINS...

...TRADE SECRET ENDS] As such, OTP may be overestimating the price of new wind resources.

C. OTP's Modeling Unrealistically Favors Natural Gas Over Renewables.

Even after setting aside those sensitivities in which OTP assumed there was no external market for capacity or energy,¹⁶ there is still an issue with the extent to which certain combustion turbines ("CT") are dispatched in Strategist. Specifically, the preferred plan (Run 22 with market on) was selected with the knowledge that both [TRADE SECRET BEGINS...

...TRADE SECRET ENDS]. This is simply not representative of how CTs are

¹⁶ Environmental Intervenors maintain, as we have in prior dockets, that it is unreasonable to think that any Minnesota utility will have no interaction with the MISO market or any other utility.

operated. In addition, the sensitivities in which OTP models compliance with the SES and the GHG reduction goals result in much more reasonable capacity factors at these units. It is possible that the preferred plan may look lower in cost than the solar compliance sensitivities¹⁷ in part because [TRADE SECRET BEGINS...

...TRADE SECRET ENDS].

IV. OTP'S LOAD FORECAST IS NOT RELIABLE

Lastly, Environmental Intervenors assert that OTP's 2013 IRP is undermined by an unreliable load forecast. Over the last several resource planning related proceedings, OTP has continued to temper expectations for its load and energy demand growth and to reduce the starting point of its load forecasts even as the rate of growth remains roughly the same. Figure 5 compares four OTP peak demand forecasts filed since January 2008.

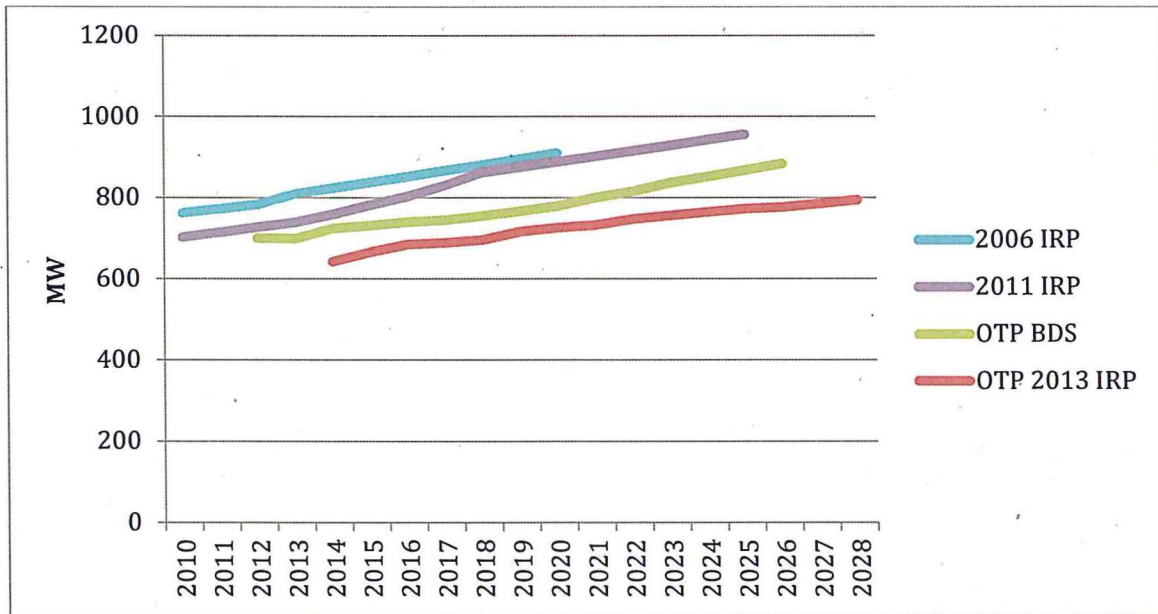


Figure 5. Four OTP Load Forecasts Filed Since January 2008¹⁸

¹⁷ There is no GHG reduction goal plan that can be compared to OTP's preferred plan because the preferred plan was run without consideration of externalities or CO₂ price.

¹⁸ The 2006 IRP forecast in Figure 5 was actually filed in January 2008.

The same trend is evident in its energy forecasts, shown in Figure 6.

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...TRADE SECRET ENDS].

As we articulated in our comments on OTP's Baseload Diversification Study, Environmental Intervenors believe that decreasing energy demand is linked, as least in part, to increasingly stringent building codes and new appliance standards.²⁰ OTP disagreed with this assertion and argued that there was no evidentiary support for this link and that these factors would not lead to dramatic load reductions.²¹ The Department of Commerce ("Department") has

¹⁹ **[TRADE SECRET BEGINS...**

...TRADE SECRET ENDS].

²⁰ Environmental Intervenors' Comments dated November 30, 2012 in Docket No. E017/RP-10-623 at 5.

²¹ OTP's Reply Comments dated December 17, 2012 in Docket No. E017/RP-10-623 at 4.

also noted that models will implicitly project changes in building codes into the future and that, accordingly, OTP does not have to account for these changes explicitly.²²

Although OTP's load forecast would indeed account for the continuing impacts of *historical* codes and standards, the Department's argument does not explain how using historical data would account for *increasing* impacts from codes and standards. Environmental Intervenors assert that OTP has again overestimated its load and energy forecasts and will have to continue to revise downward its load and energy forecasts. The downward pressure on energy consumption is certainly not unique to OTP. In fact, the American Council for an Energy-Efficient Economy recently conducted a study looking at the reasons why demand across the country has been stagnant in recent years. The authors found that "Over the more recent period of 2007-2012, savings from energy efficiency programs and policies²³ and warmer winter weather appear to be the most important contributors to declining electricity use. Over this period, savings from equipment efficiency standards and utility-sector energy efficiency programs have increased substantially, and these effects were statistically significant for the residential/commercial sectors but not for the industrial sector."²⁴

The bottom line is that OTP continues to overestimate its load forecast. In light of evidence prior forecasts overestimated energy needs, OTP should be required to consider the effect of efficiency measures such as increasingly stringent building codes and appliance efficiency standards when estimating its load forecast.

²² Department of Commerce Division of Energy Resource's Reply Comments dated December 17, 2012 in Docket No. E017/RP-10-623 at 2.

²³ Defined as utility energy efficiency programs, appliance standards, building codes and the like.

²⁴ Nadel, Steven and Rachel Young, "Why is Electricity Use No Longer Growing?", February 2014 at 14.

V. CONCLUSION

Minnesota law contains a preference for renewable resources. As such, a utility cannot plan on adding a nonrenewable resource to its fleet without first demonstrating that a renewable option is not in the public interest. OTP considered renewable options and rejected them due to cost concerns. Environmental Intervenors assert that this cursory treatment of renewables coupled with a preferred plan that will fail to meet multiple state standards is insufficient to demonstrate that a renewable resource option is not in the public interest. In addition, the flaws in the modeling discussed above created an unnecessary bias against choosing these renewables.

Accordingly, the Environmental Intervenors urge the Commission to require OTP to address these issues before the 2013 IRP can be approved.

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Respectfully submitted,

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