BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN
Cardinal Hickory Creek Docket 5 CE-146

Initial Brief of SOUL of Wisconsin in Opposition to the Application

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Introduction

The Commission should focus on the common goal of maintaining solvency of Wisconsin Utilities while providing affordable, reliable power and cost-effective C02 reduction.

Wisconsin State Sen. Howard Marklein suggested the following to PSC Chairman, Lon Roberts about the CHC Project,

> *"Throughout the last three years, I have studied the proposed powerline project, met with stakeholders and listened to dozens of concerned constituents.... I share the main concern among my constituents. We want to know whether this powerline project is necessary... I am also concerned about the financial implications of this project. I do not want the residents of our communities to suffer an unfair financial burden on our utility bills as a result of this project. Please consider this concern during your analysis."* [1]

Sen. Jon Erpenbach wrote to Roberts with three other lawmakers:

> *"With the rapid expansion of high-voltage transmission HVT facilities throughout Wisconsin over the past 10 years, they have had substantial impacts on rates and fixed fee increases."* [2]

Among the eight, total lawmakers, Representatives Nowak and Tranel wrote,

> *"Again, we are asking that the PSC considered the cost benefit ratio of the Cardinal Hickory Creek transmission line proposal, If it is determined that more capacity is needed, we would request that alternatives which improve service without such a large capital investment be strongly considered. Homeowners and small businesses can't afford increases and electrical rates are small businesses in Southwest Wisconsin need to remain competitive and higher electrical bills are a tremendous liability."*

In February of 2018, in its invitation to the Inter-Municipal Energy Planning Committee to participate in the WI PSC's Grid Modernization inquiry, Commission staff posed the question: "What regulatory difficulties does IMEPC foresee in reaching its Grid Modernization goal?"[3] The Committee of nine municipalities responded with interest in a Town of Arena / WP&L collaboration to accelerate lower-cost distributed energy resources and thereby avoid capital spending. [4]

In August, 2018, in a section titled, "Rate Metrics and Cost Drivers," the PSCW's 2024 *Strategic Energy Assessment* described "authorized revenue requirements," of Investor-Owned Utilities with Generation and Non-Major Investor-Owned Utilities and Municipal Utilities, disclosing rate pressure imposed by continuing growth in revenue requirement components. This is the context in which Applicants continue to pressure for continuing capital utility investment providing services with increasingly lower value. In this case, perhaps more than any before, ratepayers seek help from the Commission to slow and reverse this unproductive trend.

Applicants are focusing on their specialities and ignoring the pressure on rates. Their *No Action*[5]*,* base case includes approximately $200-$270 billion in new power plant related costs.

Applicant witness, Tom Dagenais criticizes, SOUL witness Bill Power's Optimized NTA for IMEPC member Town of Vermont for supposedly assuming that, "area utilities will be able to maintain solvency on a long-term basis with minimal rate increases while serving little to no area load and while paying retail electric rates to individual ratepayers who will be overproducing energy, make little sense."[6] This Commission has to save the utilities from their penchant for living in the past. As SOUL Witness Bill Powers' stated:

> *"Witness Dagenais underscores a critical point with this statement. A status quo utility business model, which he presumes is immutable, is not a good fit for a clean, distributed energy future of which the Optimized NTA presented in my direct testimony is an example. For this reason, utility models around the country are evolving to anticipate a future with many distributed energy resources supplying the grid, and utility earning revenue by coordinating the flow of this distributed energy resources (DERs) – not by serving load in the traditional "volumetric supply" manner presumed by Witness Dagenais."* .[7]"

As "solvency" is the ability of all parties-- private companies, the state, municipalities and individuals -- to meet their, long-term, debts and financial obligations, this proceeding has signaled that all parties will have to work together and realize monetarily responsible energy planning[8]. If the Commission wants to curb the, "construction cycle" and high increases in required annual revenue, all of these parties must be prepared to conduct energy planning based on collectively fewer dollars spent.

ANALYSIS

Applicants Ignore Important Costs

The FEIS cites studies suggest mathematical formulas to help estimate impacts of 345 kV transmission on property values, future business and housing development and tourism. Unlike the carefully generated estimates concerning costs for and potential benefits from the 345 kV project, the FEIS does not take the next logical step of estimating the land-based economic impacts. By applying suggested formulas to three examinations conducted by public intervenors of municipal property value devaluations through sales transactions over time, the highly significant monetary repercussions from the 345 kV transmission line can be sensed in Table 1:

TABLE 1: Rough estimate of property devaluations in Project study area based on local estimates submitted to the docket by three potentially affected municipalities[9].

Municipal Unit	Total Value of Properties Directly Encumbered	Total Value of Properties Views-cape Encumbered	Percentage Loss Due to Direct Impact	Percentage Loss Due to View-scape Impact	Combined Losses Over Time	Reference Total Estimated Environmental Impact Fee
Town of Cross Plains	$21,867,800	$31,822,500	15%	5%	-$4,871,295	$906,442
Town of Cross Plains	$34,816,800		15%	5%	-$5,222,520	$574,223
Vilage of Montfort		$4,170,600	15%	15%	-$625,590	$2,955
				Sample Total	-$10,719,405	$1,483,620
				Average	-$3,573,135	
		Rough Estimate for 25 Affected Municipalities			-$89,328,375	

If the EIS's cited more conservative 10%[10] devaluation percentage is applied to only directed impacted properties, the roughly estimated loss across the study area would be around $70 million. These devaluations would eventually affect tax revenue, levying and mill rates, They do not account for lost development housing and businesses not constructed in the view-scape or even larger impacts on tourism. 38-39% of DEIS comments expressed concern about losses in property value, business and tourism.[11]

Cumulatively, without assigning monetary values to the adverse impacts on natural systems, agriculture, grazing, forestry and recreation, the Commission would be wholly justified in adding $100-$120 million to the Project cost of $67 million creating a comprehensive cost of about $180 million when budgeting alternatives for comparisons of net benefits.

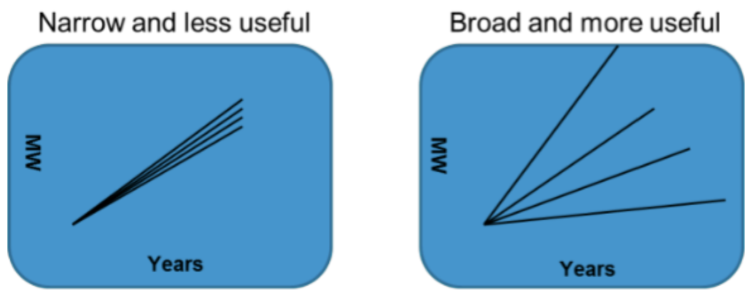
The Benefits of Alternatives Should Have Been Addressed from the Outset.

This proceeding also brought to attention of the public that the software tools used for calculating long-term, potential energy cost savings are typically not configured to fully account for the monetary impacts of Non-Transmission Alternatives. They exclude the economic benefits of avoided energy use. Had PSC engineering staff initiated a PSC Non-Transmission Alternative before the application saddled staff with non-stop PROMOD reviews, staff might have noticed this flaw and asked the applicants to address the issue in their first set of data requests. As shown below, including savings from avoided energy use would have elevated the consideration of Non-Transmission Alternatives. Because Applicants omitted customer energy savings – a factor of high importance to the ratepayers this Commission is directed to protect-- and because staff was saddled with massive tasks in a very limited time frame, this critically important information did not become part of the proceeding until April 26, 2019, when intervenor testimony was submitted.

A decision to upgrade existing infrastructure and encourage end-user improvements better serves the purposes of the Commission and the state.

The asserted purposes of ATC's "strategic flexibility" and MISO's "reasonable bookends" methodologies is to establish a range of claimed "plausible" future scenarios.[12] MISO portrays it thus:

Figure 1 : MISO's Figure labeled, "Robust Figures Capture Reasonable Bookends. [13]



"Reasonable bookends" for the Commission must be defined differently from how MISO – an entity that is now creating broad ranges of hypothetical growth to hide unnecessary unnecessary investments– defines them. The "bookends" for the PSC are defined by ratepayers' interests, preferred energy strategies as established by the legislature, and the factors indicated in the CPCN law. Effective decision-making requires sufficiently detailed options that advance these interests. The Applicants' *plausibilities* are big on money and small on solutions.

When committing ratepayers' wallets it is conservative to develop, and to choose, an option for which benefits can be expected with a great degree of confidence. That option here – which Applicants sought to obscure – would combine an NTA with acceleration of already-planned upgrades to existing infrastructure.

When energy use is more or less flat, "flexibility" means doing what you know will work. This means taking paths to reliably produce benefits soon not those that *might* produce benefits later on. MISO planners seem incapable of grasping this.

The Applicants' software assumptions and preferences masked over the economic advantages of rebuilding and uprating transmission facilities approaching the end of their expected life. Overwhelmingly persuasive, and largely unchallenged, testimony discloses how fast evolving NTA options are aligning with Wisconsin's priorities to produce superior values for Wisconsin ratepayers.

Desired Transmission System Capabilities Can Be Enhanced At Much Lower Cost By Implementing The PSC Staff's "Base With Asset Renewal Alternative and Grid Modernization" Option And Similar, Already-Contemplated, Grid Improvements.

A very significant percentage of Wisconsin's transmission system was built between 1950 and 1980. [14] The wooden poles making up much of this system have a lifespan of about 70 years. ATC expects to re-build nearly one-quarter of its lower voltage lines (2,000 miles) over the next 20 years[15].

PSC staff have determined that rebuilding, when appropriate, can double the power transfer capabilities of these lines.

PSC Staff's Base with Asset Renewal Alternative (BWARA) would make three rebuilds or "up-rates" already scheduled by 2030:

Base with Asset Renewal Alternative (BWARA) Cost $897,474

- 2.6 mile Turkey River – Stoneman 161 kV crossing the Mississippi River at Cassville;
- 2.5 mile Stoneman - Nelson Dewey 161 kV from S. Cassville to N. Cassville;
- Townline Road - Bass Creek 138 kV[16]

Staff observes thar making these upgrades

". . . would alleviate the major constraints on the existing transmission system in south-western Wisconsin, and that the proposed Cardinal-Hickory Creek project provides a gross avoided reliability benefit of $897,474, when using the NERC Transmission Planning Criteria stipulated in NERC TPL-001-4." [17]

PSC Modeling that included the impacts of two, recently approved, in-state, solar installations in SE and SW Wisconsin showed improved generation balances and grid flows:

".. . . incorporation of the Commission-approved Badger Hollow and Two Creeks solar facilities greatly reduced flows across existing constrained transmission system elements in Wisconsin in the absence of the proposed Cardinal-Hickory Creek project."[18]

"Similarly:
"For [the] Base with asset renewal" alternative, overall, flows are much lower [less congested] than any other alternatives because of the upgraded MVA ratings of some of the transmission lines." [19]

Staff cannot promote improvements beyond the current docket but four additional low voltage lines (marked ^) in South and South-Central Wisconsin have been essentially identified as sequential system rebuilds/uprates and the Applicants have identified additional low voltage transmission lines they consider old enough to be upgraded along with CHC:

- ^ Portage B2-Columbia 138 kV
- ^ Columbia-Portage 138 kV
- ^ West Middleton-Timberlane Tap 69 kV (Middleton, #6927)
- ^ Timberlane Tap-Stagecoach 69 kV (Cross Plans area)
- Nelson Dewey – Eden 138 kV (Cassville – Montfort, X-16)
- Nelson Dewey – Hillman 138 kV (Cassville- Platteville, X-15)
- Hillman – Falcon 138 kV (Platteville- E. Platteville, X-14)
- Eden – Hillman 69 kV (Montfort- Platteville, Y-106)
- Eden – Dodgeville 69 kV (Montfort- Platteville, Y-138)
- Eden – Spring Green 138 kV (Montfort- Spring Green, X-17)
- Wally – Stagecoach 69 kV (Mount Horeb – Cross Plains, X-128)

By combining these lists, decision-makers can ascertain that about one dozen older transmission lines in the Project study area will require rebuilding that will greatly increase their power transfer abilities in the near future. From a reliability perspective, these sequential projects, many serving population centers, comprise most of what Applicants characterized as a chronically[20] challenged system that they claim requires the 345 kV Project they want the PSC to order the ratepayers to pay for.

Grid Modernization and Non-Transmission Alternatives As Proposed By SOUL Work In Concert To Serve The Purposes The Commission and the whole State

Neither PSC staff nor Applicants have analyzed the cumulative effect of these pending improvements. Further, they have not yet started the exciting and community-engaging processes of Grid Modernization incorporating use of Distributed Energy Resources (DERS), such the use of solar and battery storage support at locations that can extend the lifespan of transformers and other expensive components. As SOUL witness Bill Powers points out, this is already happening in Wisconsin. In addition to municipal projects now underway by UMMEG, Applicant Dairyland Power Cooperative has added about twelve collaborative, community solar farms near aging transmission line substations to prolong the lifespan of expensive transformers and other expensive components.[21] As Applicants' own witness, Dr. Chao, confirmed,[22] the trend in such development is to fund the NTA either entirely locally, through third party commercial developers or through collaboration of member-customers and commercial interests as Dairyland has done. This model is highly advantageous. It allows utilities to participate, if desired; it encourages state-located DER services to grow; it enables served businesses and households who want to "go solar" but can't site it; finally it avoids avoid conscripting ratepayers to expansive capital expenses.

NTAs emphasize efficiency and distributed renewable resources. They are designed and sited to reduce use of grid power that still averages only 9% renewable energy (8% wind and 1% hydro).[23] NTA's maximize CO2 reductions by avoiding use of carbon-laden grid power while providing end users with energy savings, load management abilities and, increasingly, resiliency through personal and shared solar + storage.

Utilities will and should ask for more sharing of incentives to enter these collaborations but, unlike high capacity transmission expansion, there is strong evidence of electric customer and municipal/county government engagement with this direction.

PHASE OF DOCKET REVIEW	On Line comments OPPOSING the high voltage transmission option	On Line comments SUPPORTING the high voltage transmission option	Mentioning NTA's, local energy, energy efficiency, solar	Mentioning BWARA, rebuilding existing lines
Draft EIS Public Input	339 / **93%**	27 / **7%**	58%	n/a
FEIS/Public Hearing Input	492 / **98%**	11 / **2%**	35%	16%

Comment tabulators Laurie Graney, Lila Zastrow and David Hendrickson agreed upon the total count of 503 online comments. These do not include testimony made in-person, submitted in writing at the public hearings or mailed in.

Considering that online commenters are more prone to open the comment window and start typing what is on their mind, the number of mentions of "NTA's" and "BWARA" indicate significant interest in alternatives. BWARA was unknown to the public 60 days before the public hearings. Though not tracked, tabulators noticed a considerable number of commenters reside outside of the study area and there were a significant from out of state electric customers.

The NTA's Presented By SOUL Witness Powers Illustrate How The Commission Should Move Forward Now.

NTAs commonly expand rebate amounts and offerings in state energy efficiency programs. Mr. Powers' NTA proposal for SOUL incorporated utility-offered load management and existing and new Focus on Energy rebates,[24] and added Focus rebates for community solar and aggregated "PowerWall" style residential battery storage.[25] In modeling numerous villages and smaller cities in Southwestern and South-Central Wisconsin where transmission and distribution facilities will be remodeled in coming years[26], Powers also included municipal-scaled solar facilities with battery storage based on a successful PPA collaboration between Dannon Yogurt, Wisconsin-based Half Moon Ventures and the Minster (Ohio) Municipal Utility. [27]

TABLE next page

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TABLE 3: Components of Bill Powers' $66 Million Optimized Non-Transmission Alternative

NTA Components	Component Cost (Millions)	Incentive Amount	Number of Participants	Net Savings/Year	*Benefit Note*
Industrial Load Management Program	$20.0	$1,500	200	$250.00	*150 kW Per Company*
Focus on Energy Incentives	$3.6	various	88,125	$3	*Targeted Rebates to reduce load in needed areas*
Residential Solar Installation through Focus on Energy	$16.0	$267/kW rebate	12,000	$700	*Net Zero Carbon Homes 6kW Solar*
Back-Up & Aggregated 12 kWh Battery Storage for solar installations w/FOE incentives	$18.0	$1500 rebate	12,000	$0	*Back-Up Power for Home and Emergency Use*
Community Solar Battery Charging Arrays w/ Municipal and Third party Developers (25% leased @ 6K ea.)	$3.8	$588	6,383	$573	*6kW Leased Solar Per House*
Minster OH Model Municipal Battery+ Storage Facilities – Third Party Stacked Investors 150 MWH	$5.0	None	29,375	~$170K Per Muni/Year Shared Revenue	*3 Hours Peak Use Back-Up Power*
One time Investment- >	**$66.3**				

TABLE 4: Components of Bill Powers' $177 Million Optimized Non-Transmission Alternative

NTA Components	Component Cost (Millions)	Incentive Amount	Number of Participants	Net Savings/Year	*Benefit Note*
Industrial Load Management Program	$20.0	$2,500	200	$250	*150 kW Per Company*
Focus on Energy Incentives	$3.6	various	205,625	$1	*Targeted Rebates to reduce load in needed areas*
Residential Solar Installation through Focus on Energy	$62.7	$267/kW rebate	40,000	$674	*Net Zero Carbon Homes 6kW Solar*
Back-Up & Aggregated 12 kWh Battery Storage for solar installations w/FOE incentives	$70.5	$1500 rebate	47,000	$700	*Back-Up Power for Home and Emergency Use*
Community Solar Battery Charging Arrays w/ Municipal and Third party Developers (25% leased @ 6K ea.)	$8.8	$588	14,894	$573	*6kW Leased Solar Per House*
Minster OH Model Municipal Battery+ Storage Facilities – Third Party w/Stacked Investors 350 MWH	$11.6	None	68,542	~$170K Per Muni/Year Shared Revenue	*3 Hours Peak Use Back-Up Power*
One time Investment- >	**$177.1**				

Non-Transmission Alternatives relying on *distributed, end user* solutions including load management, energy efficiency, solar and storage produce benefit to cost ratios in excess of 20:1. This is because their main product, avoided energy use, is realized at retail instead of wholesale rates. This is a *profound* economic driver in states that have made the shift.

TABLE 5: Comparison of Economic Benefits and CO2 Reduction Capabilities of key Alternatives before the Commission[28]:

Alternatives	Cost (millions)	Energy Cost Savings	Capacity Loss Savings	Other Savings (total)	Avoided Energy Cost Savings	Energy Sales	Tons CO2 Reduction (40 years)	MISO CO2 Goal	Net Benefits	Benefit to Cost Ratio
CHC Evaluated by Applicants - PR•	-$67.0	105.5	2.5	93.2	n/a	n/a	36.3	-25 % (already met)	$105.5	1.6
CHC Evaluated by PSC Staff- PR CBM and 6.4% Discount Rate^^	-$67.0	61.4	2.5	43.8	n/a	n/a	n/a	-25 % (already met)	$2.9	0.0
CHC Evaluated by PSC Staff- PR APC and 8.4% Discount Rate^^^	-$56.4	15.1	2.5	34.5	n/a	n/a	n/a	-25 % (already met)	-$32.8	-0.6
NTA – Evaluated by Applicants -PR•	-$70.3	31.7	27.1	1.2	n/a	n/a	n/a	n/a	-$10.3	-0.1
Chao NTA (not evaluated for benefits)*^	-$177.2 - $287.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BWARA with Powers Optimized NTA 2 •• pp	-$178.0		20.0		2,111.0	2,219.0	39.6		$4,172.0	23.4
Powers NTA 1 – Optimized For CHC Budget p	-$66.3		20.0		774.4	767.6	12.2		$1,562.0	23.6
Powers NTA 2 - Optimized For Comprehensive CHC Budget pp	-$177.1		20.0		2,111.0	2,219.0	33.1		$4,488.6	25.3
Base With Asset Renewal Alternative (BWARA) - PR••	-$0.9	2.0	n/a	n/a	n/a	n/a	6.5	n/a	$1.1	1.2

Emerging Practices Are Superior To The Project.

Economic and CO2 reduction benefits of NTAs increase when they are sited and designed to remove load from constrained transmission facilities. Already-identified opportunities for sthis targeting exist at substations near Cassville, Mount Horeb, Cross Plains, and Platteville. Contrary to Applicants' contentions, these solutions increase grid flow or "transfer" comprehensively.

The Applicants, instead, convert existing infrastructure into "stranded assets.[29]" Then, they appropriate them as benefits. NTA's do the opposite; they reduce strain on aging transformers and 1950-1970 era conductors extending their useful life span while creating *savings* that communities and utilities use to replace transformers and wires when the time comes.

When SOUL witness Power's NTA 2 alternative is combined with uprated transmission facilities, the PSC-staff designed "BWARA," the advantages of such *right-sizing* become very apparent. Comparable strategies are advancing quickly in other states because coordinated supply and demand side investments save money and make fastest gain on reducing CO2 emissions. The approach of MISO and the Applicants is increasingly out-of-sync with these important trends.

Analysis of the Applicants' Proposal

MISO offered little or no, up to date quantitative evidence that the Project is a fully qualifying MVP candidate.MISO offered little or no, up to date quantitative evidence that the Project is a fully qualifying MVP candidate.

In its history, MISO has only produced a single portfolio of transmission lines and it was based on cost-sharing. [30]

MISO witness, Mathew Ellis, a generation specialist, played a key role in the authoring the 2014 Triennial Review of the MVP portfolio. In cross examination he could not recall a MISO state informing MISO that is was falling behind in RPS attainment.[31]

Mr. Ellis oversaw development of the MTEP17 future scenarios that CHC Applicants used as the basis PROMOD economic modeling in this case.[32]

PSC staff pointed out that all MVP lines except CHC have been built or are under construction. Mr. Ellis did not provide evidence in his testimony of the MVP additions having created the effects MISO forecasted.[33]

End use customers or other who are not somehow paid for their participation have not been consulted in the development of MISO planning.[34] MISO has never done outreach to end use customers.[35]

Ellis now holds the titled position of Manager of Economic Studies.[36] During cross he did not not know if wholesale prices in MISO have increased or decreased since the advent of MISO. [37]

Witness Mr. Dagenais, for the Applicants, confirmed that the Demand Side assumptions adopted by Applicants for economic evaluation of the CHC do not include "High Cost Energy Efficiency," but only "Low Cost Energy Efficiency," residential, commercial and industrial end use customers. The chart that he examined shows that this applied to all residential end use customers.[38]

The Applicants have not demonstrated that the CHC project would provide Wisconsin ratepayers significant, net monetary benefits.

For ratepayers, the only tangibility of CHC economics is future impacts on monthly electric bills. As confirmed by witness for the Applicants, Mr. Degenhardt, very few ratepayers are able to interpret, "net present value," dependent calculations that Applicants have used in this case to portray pressure to demand or avoid future rate increases.[39] As is obvious, ratepayers don't pay wholesale prices. The "customers" that Applicants and MISO reference are not ratepayers, but LDCs.

Ratepayers and their governmental representatives are interested in what the facility is going to cost them and what benefits they can reasonably expect. As filed on July 24, 2017, Dane County included this language in their resolution concerning CHC:

> "The dollar amount applied to each of these non-transmission investment options, alone and in optimized combination, should equal the estimated total amount ratepayers would assume for the comprehensive costs of the proposed high-voltage transmission project over 40 years, including construction, financing, operation and maintenance. This analysis should include clear, easy to understand charts comparing the monetary and CO_2 emission impacts for the non-transmission alternatives and transmission alternatives on average monthly electric bills for Wisconsin residential and commercial customers calculated in present dollars/tons and for year 10, 20, 30 and 40, subsequently."[40]

Similar requests seeking impacts on electric bills are in many of the 29 resolutions on file. The Applicants did not provide the requested information.

To address the absence of this information in Application materials, SOUL Witness Bill Powers' estimated the impacts of CHC on Wisconsin monthly electric bills based on the Applicants[41] provided net monetary impacts. He distributed the 40 year totals volumetrically, on average by user class in Table 2, which is reproduced here:[42]

Economic Futures	Wisconsin 40 Year Net Benefits* $ Million in 2018 Dollars	Wisconsin Average Annual Benefits	Wisconsin Residential Customer Average Monthly Share, 31%	Wisconsin Commercial Customer Average Monthly Share, 34%	Wisconsin Industrial Customer Average Monthly Share, 35%
Existing Fleet (EF)	22.7	$567,500	$0.005	$0.05	$2.92
Policy Regulations with Low Energy (PRLE)	156.1	$3,902,500	$0.04	$0.32	$20.11
Policy Regulations (PR)	105.5	$2,637,500	$0.03	$0.21	$13.59
Policy Regulations with Foxconn (PRFoxconn)	129.2	$3,230,000	$0.03	$0.26	$16.65
Accelerated Alternative Technologies (AAT)	349.3	$8,732,500	$0.08	$0.71	$45.00
Number of 2017 WI Customers			2,681,341	351,707	5,666
2017 Usage (kWh)			21,233,154,000	23,641,127,000	24,204,631,000
2017 Percentage Usage			30.7%	34.2%	35.0%

These estimates are the best indicator of the potential impacts of the monetized net benefits of the Project on Wisconsin monthly electric. Though Applicants tried to confound the issue, they nowhere indicate any salient difference between the methodology used by Mr. Powers and the methodology used by ATC ten years ago[43].

Applicants have not disputed that transmission service costs are ultimately distributed to end users on the basis of volumetric use. As a key goal of rate design is to align costs with benefits, no other basis is plausible. The Applicants did not demonstrate there are meaningful changes in from calculating value of money annual rate recovery differences. Most importantly, Applicants provide no alternative estimates of impacts on Wisconsin electric bills which are, best, a few cents per month for residential electric customers. These potential pennies per month do not include $200-$270 billion in capital expansion costs Applicants hide in the 'No Action" base case

Applicants provide no ratepayer-level analysis because it would only show how much the risky benefits are not worth the known harms and costs.

The Applicants have not demonstrated that the Project is needed for further utility scale RE development in SW Wisconsin

There has been no discussion in this proceeding that any part of Wisconsin is experiencing or is expected to experience in adequate supply of power. Under these circumstances, the addition any utility-scale generation will increase pressure on rates.

Wind turbines have and always will be controversial additions to any landscape. Solar arrays larger than 20-30 acres dominate landscapes and discourage nearby housing development. Over time, large facilities induce use of more acreage for energy infrastructure which will always be perceived as imposing on the natural setting.

Assuming that CO2 emissions reductions are the underlying societal goal, a more balanced approach in the long run is making conservation and efficiency a household's or communty's top energy priorities. Where appropriate, the utilization of on-site and community solar located "behind meter" greatly increases the CO2 reduction per square solar foot by minimizing use of centrally-supplied power containing fossil fuel generation. In conjunction with *waste not ,want not,* priorities, on site, behind the meter solar + storage may be providing society our most effective C02 reduction tools for decades. This is born out in states adopting new rate structures in order to create two-way benefits and adequately protect utility solvency.

Were it not for PSC staff modeling in this docket, very little would be known about the Project's potential impact on development of new utility scale development in SW WI. MISO/Applicant software includes unbuilt MVP lines in modeling for the Project and interconnection studies. The end result is Applicants did not evaluate or share analysis of the *existing system* in SW WI nor what would happen if the many, older, existing 138 kV and 69 kV facilities were uprated. Thus, arguments suggesting that new generation in SW WI requires CHC is unfounded. Any intuitions must consider BWARA and affects of other all pending uprates.

In their analysis of the Low Voltage Transmission Alternative(LVA) Applicants wrote that it "performed comparably to the Project," It is significant that the LVA is based on a new 138 kV line from Cassville to Middleton[44] The referenced energy cost savings for the LVA have a 1% advantage over those of the Project and change only 5% after the "Eden Outlet Constraint is addressed in modeling. This suggests modeling uprating/doubling the capacity of the existing 138 kV wires going east out of Montfort would have very interesting implications.

There are strong indications the power plant development in the Montfort/Cobb area stem, primarily, from lower interconnection costs. Whether CHC is approved or not, there is limited proximate siting. Interconnection costs for more plants would increase with every additional mile from area substation. Another reason that RE development in SW WI may be near peak is unknowns about the continuation of federal and tax payer incentives for utility-scale spending.

As PSC staff have been compelled to explain many times, modeling power from Badger Hollow at the proposed 345 kV CHC Hill Valley substation caused energy cost savings for CHC to decline 66% in the PR case and 77% in the AAT case. [45] How much "benefit" detriment to the Project would introducing more power at Hill-Valley add? No one knows because case records are silent. The use of comprehensive settings in energy planning software without pre-loaded billions in utility expansion and focusing on existing transmission line renewals with Non-Transmission Alternatives has been attempted. SOUL thinks now is the time.

Conclusion

The law requires the Commission to disallow the Project.

The law deems "supply" to be a potential "alternative" to transmission. Other "locations or routes" are also deemed alternatives. The law requires the Commission to consider these alternatives against the proposal in light of "individual hardships, engineering, economic, safety, reliability and environmental factors." The Commission can approve the proposal "only" if it finds, in light of these factors, that the proposal is both needed, and superior to the alternatives as a means to advance the public interest. Wis. Stat. § 196.491(3)(d)3.

Customer and community-based generation, efficiency improvements and storage are "alternative sources of supply." These sources are available *now.* Without dispute, these alternatives are rapidly evolving. They are also increasingly being combined together with targeted (and limited) infrastructure investment to avoid larger, costs – notably transmission and substation costs.

An energy strategy focused on customer- and LDC- side supply, efficiency and storage investments costs less and provides more than the Project. Some incentives for these investments are already "baked into" existing policies, e.g., tax incentive policies. Other incentives can be readily expanded through already existing programs, e.g., Focus on Energy. The strategy leverages other resources that cost ratepayers, as a group, nothing: customer side contributions to the associated hardware such as distributed solar and batteries are entirely "off the books" of the utility system. LDC-based strategies designed to extend the life of conductors and substations deliver benefits in excess of costs.

These resources on the "other" side of the transmission system are available to the Commission to harness. The compelling cost trends and incentives associated with them mean that they will, increasingly, have to be managed anyway, irrespective of whether the Project is built. The Commission's opportunity here is to decide to forego the Project and optimize these resources in the interests of ratepayers. SOUL witness Powers described, without rebuttal, how innovative regulators and communities are doing so now.

Superior "locations and routes" are also available. Wis. Stat. § 196.491(3)(d)3. The Commission need only advance already-planned transmission upgrades, as disclosed by the PSC staff analysis that this brief has labeled "BWARA". BWARA costs only 1.3% as much as the Project.

The superiority of any rationally-designed NTA combined with BWARA is obvious.

Economically, it is no contest. Wis. Stat. § 196.491(3)(d)3. An alternative constituted of these components costs less, or, if the Commission were to "go deep" on the NTA, might cost the same while providing much, much more. It strengthens already-existing infrastructure and leverages customer- and community- side investment in supply, efficiency and storage to substitute for adding another transmission line to ratepayers' system charges.

On safety, it is no contest. Wis. Stat. § 196.491(3)(d)3. Upgrading existing infrastructure avoids adding new transmission, which means fewer wires and thus fewer safety hazards. Upgrading existing infrastructure through BWARA means newer wires and fewer safety hazards.

On reliability, it is no contest. Wis. Stat. § 196.491(3)(d)3. The Project is not needed for reliability and its reliability benefits are incidental. Moreover, much of the claimed reliability benefits derives from the Applicants appropriating for the Project the benefits of the already-planned BWARA upgrades that cost 1.3% less than the Project. Combining BWARA with customer- and community- side supply, efficiency and storage brings superior reliability by substituting new infrastructure for old and adding resilience that comes from improving efficiency and adding distributed generation and storage, a combination that lowers requirements on the Transmission system. This feature led former FERC Chair Wellinghof to opine that a well-designed NTA could provide benefits comparable to a transmission Project, and, merit the same cost-sharing benefit as the Project.

On environmental factors, it is no contest. Wis. Stat. § 196.491(3)(d)3. Neither wildlife refuges nor associated flyways nor any other land is subjected to the blight and hazards of by new transmission lines.

Finally, on individual hardships, it is no contest. Wis. Stat. § 196.491(3)(d)3. The Commission has heard the perspective of individuals whose lands, communities and resources will be permanently scarred by the Project. A combination of BWARA with a well-designed NTA subjects no new landowners, communities or corridors to new transmission. Landowners who already have transmission infrastructure on their property obtain the benefit of newer and safer facilities.

The combination is also more compatible with every element of the energy priorities law, Wis. Stat. § 1.12. Respecting supply, the NTA component focuses entirely on facilitating the highest priority resources, improved efficiency and no-combustion renewable energy. On transmission siting, it not only uses existing corridors, upgrading transmission instead of building new transmission lines.

There is only one reasonable decision, and it is obvious.

Respectfully submitted on July12, 2019.

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1 Ex.-CK-Klopp-18-15

2 Id.-10

3 Ex.-SOUL-Powers-38-2

4 Id. . starting at pdf p. 7 "Time to Curb Capital Utility Spending: ...After steadily ramping up investment in new distribution and transmission since 20008 (with parallel rate and fee hikes even as wholesale energy cost dropped), [ALLIANT-WPL] now projects capital investments averaging around $177 million per year in distribution-related investments going forward... In other states, sheer economics are redirecting regulators to develop incentives to encourage utilities to support locally-serving, end user improvements...In its 2013 Distribution study, ALLIANT-WPL tentatively earmarked $57.4 million for distribution substation rebuilds and component replacements in WPL's South Region12. One of these projects targets potentially replacing transformers worth $1 million in a 69 kV substation located 1 mile from Arena Town Hall, squarely within IMEPC member, Town of Arena's, jurisdiction. The potential expense is scheduled for 2022 and premised on addressable overload (2.5-7.5 MW14), should load grow in the serviced area. Even with a .5% per year increase in peak demand, however, accelerated energy efficiency, load management, and solar development are Grid Modernization solutions that can address such projected load growth: [suggested were:] ***Collaborative Utility/Community/Private Developer Solar Farm**: Located near the Arena substation, such a solar farm would remove Arena area load from the substation, thereby lowering demand on the transformers and facilitating more economic power transfer to downstream users. As shown in Figure 518, the location presents possible sites for as much as 7 MW of solar capacity within a half mile of the substation; ***Accelerated Energy Efficiency/Conservation; and, Load Management,"**

5 Ex-PSC-Grant-1 at p. 36

6 Rebuttal-Applicants-Dagenais at p.55

7 Surrebuttal-SOUL-Powers 5

8 Ex.-JDS-Stanfield-5r-14, Principles of Grid Modernization drawn-up by Minnesota emphasize cooperation: "• Maintain and enhance the safety, security, reliability, and resilience of the electricity grid, at fair and reasonable costs, consistent with the state's energy policies; • Enable greater customer engagement, empowerment, and options for energy services; Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies;.."

9 Ex.-Klopp- 8 at p.3 for Town of Cross Plains; Ex.-JDS-Stanfield-1r at p.6 for Town of Vermont; Ex.-VOM-Kielisch-2 at p. 42 for Village on Montfort. Cardinal-Hickory Creek Transmission Impact Fees from, Appendix L, Tables 1 and 2, Impact Fee Distribution Preferred and Alternate Routes, PSC REF#341393. For consistency in this table, total 2018 assessed values have been multiplied by the same percentages for the two towns. For the village, the lower percentage of 15% suggested by expert witness Kurt Kielsch for view-scape impacts was con
sistently applied to all potentially affected properties proximate to the proposed Hill-Valley substation.

10 FEIS at p. 164

11 FEIS at p.10, Table 1-6.

12 Ex.-SOUL-Powers-13 at pdf p.8

13 Id. at pdf p.9

14 Ex.-PSC-Rohankar-3 at p.20

15 Id. at p. 21

16 Location and size is not yet known. SOUL has not been able to find it in the fine print of the 2010 WI transmission map with named substations.

17 Direct-PSC-Vedvik-37

18 Direct-PSC-Vedvik-37

19 Direct-PSC-Rohankar-12

20 Attachment 4.12-1, Alternatives Evaluation Study (2016), footnote 12 at p. 27 reads, "The Lore-Turkey River-Stoneman- Nelson Dewey 161 kV path has been a historical constraint in many types of analysis since before MISO and the MISO market existed. Lore – Turkey River – Stoneman was rebuilt / uprated in the past couple of years so the constraint moved to the next element." But excessive constraints on the facility date to 1998. See Table 4.1 on p. 77 (pdf p. 93) in the 1998 Report the Wisconsin Legislature on the Regional Electric Transmission System, and for 2005, Commission Staff Draft Report on the Access Study Initiative, at p.3 Docket 137-FE-100, PSC REF# 44916

21 Ex.-SOUL-Powers-23, Direct-SOUL-Powers-24

22 Tr. 374-706 (Day 1), at p. 610

23 Ex.-SOUL-Powers-13 at p. 23, Figure 24: Energy Utilization by Resource, MISO Renewable Energy 2016. The amount remained at 9% in 2018 according to MISO's independent monitor, Potomac Economics in their 2018 STATE OF THE MARKET REPORT FOR THE MISO ELECTRICITY MARKETS released this June.

24 Ex.-SOUL-Powers-40

25 Ex.-SOUL-Powers-22, Ex.-SOUL-Powers-20

26 Ex.-SOUL-Powers-39 includes an NTA siting draft for the Town of Vermont and Village of Black Earth where load would be removed from the Wally – Stagecoach 69 kV line

27 Ex.-SOUL-Powers-37, Ex.-SOUL-Powers-36 and Ex.-SOUL-Powers-25

28 CHC Project *FEIS at p.100 Table 3-1; CHC Project^^ FEIS at p.103 using CBM and 6.4% Discount Rate; CHC Project ^^^Ex.-PSC-Vedvik at p.3 using 8.4% Discount Rate and the APC method; NTA Evaluated by Applicants -PR* *FEIS at p.100 Table 3-1; Chao NTA*^ *^ Sur-surrebuttal-Applicants-Chao-8 assumes 7.05% Discount Rate; BWARA with Powers Optimized NTA 2 ** pp Ex.-SOUL-Powers-32; Powers NTA 1 Optimized For CHC Budget p Ex.-SOUL-Powers-31; Base With Asset Renewal Alternative (BWARA) - PR** ** Ex.-PSC-Vedvik-3; BWARA CO2 reductions based on increased Iowa to WI transfer capability by 250 MW or 18% of Project capacity of 1388MW.

29 Direct-PSC-Vedvik- at pp. 20 to 21

30 Tr. 707-1047 (Day 2) p.717

31 Tr. 707-1047 (Day 2) p. 743, Tr. 707-1047 (Day 2) p.751

32Tr. 707-1047 (Day 2)750

33 Surrebuttal-PSC-Vedvik-5

34 Tr. 707-1047 (Day 2) 761

35 Tr. 707-1047 (Day 2) p.754

36 Direct-MISO-Ellis-1

37 707-1047 (Day 2) p.757

38 Ex-PSC-Grant-1-34

39 TR. 374-706 (Day 1) p. 631

40 ex.-CK-Klopp-17-4

41 Which would be generally lower under PSC benefit calculations.

42 Direct-SOUL-Powers-r2- 20

43 Ex.-SOUL-Powers-28 pp.269,270

44 Ex-PAD pdf at p. 53 Table 4: Energy Cost Saving Benefits for All Alternatives LVA: $166.1 Project: $164.0 The 1% energy cost savings advantage of the LVA over the Project was changed to a small 5% advantage for the Project after Applicants fixed the "Eden Outlet Constraint."

45 Direct-PSC-Vedvik-36