Upper Peninsula Energy Task Force Committee Recommendations

Part II – Energy Supply

Department of Environment, Great Lakes, and Energy

March 31, 2021

Compiled by:

Public Sector Consultants

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Appendices

Gov. Whitmer forms U.P. Energy Task Force

On June 7, 2019, Governor Gretchen Whitmer issued Executive Order 2019-14, noting that Upper Peninsula residents were incurring some of the highest electricity rates in the nation. The Governor directed the U.P. Energy Task Force to consider all available information and make recommendations that ensure the U.P.'s energy needs are met in a manner that is reliable, affordable, and environmentally sound. Her goal was the development of policies that would lead to the implementation of real energy solutions to rein in high rates and provide relief to hardworking U.P. residents.

The charge to the task force from Executive Order 2019-14 is as follows:

1. Assess the U.P.'s overall energy needs and how they are currently being met.
2. Formulate alternative solutions for meeting the U.P.'s energy needs, with a focus on security, reliability, affordability, and environmental soundness. This shall include, but is not limited to, alternative means to supply the energy sources currently used by U.P. residents, and alternatives to those energy sources.
3. Identify and evaluate potential changes that could occur to energy supply and distribution in the U.P.; the economic, environmental, and other impacts of such changes; and the alternatives for meeting the U.P.'s energy needs in response to such changes.

The Executive Order is attached as Appendix I.

A list of presentations and listening sessions is attached as Appendix II.

Part I of the report focuses on the short-term steps the state could take in reaction to a disruption of propane supply to Michigan customers. Part II of the report evaluates the U.P.'s energy needs through a broader lens to ensure the U.P.'s energy needs long-term are met in a manner that is reliable, affordable, and environmentally sound.

Letter from Chairperson

The residents of the Upper Peninsula "deserve an energy supply that is affordable, secure, and environmentally sound." Those were Governor Gretchen Whitmer's words and vision when she created the U.P. Energy Task Force in June 2019.

The exceptional geography which makes the U.P. such a spectacular place to live, work, and play has also hindered its infrastructure development and contributed to market dynamics that expose U.P. families and businesses to some of the nation's highest electricity rates and energy supply vulnerabilities.

The Governor called on the Task Force to recommend alternative solutions for meeting the U.P.'s unique energy needs that will overcome those challenges.

This Task Force report, **Upper Peninsula Energy Task Force Committee Recommendations: Part II – Energy Supply**, makes 16 such recommendations for action by the Governor, State Legislature, and state agencies. They include solutions to promote enhanced planning and coordination among energy providers; support the transition to cleaner, more advanced energy supplies; expand opportunities for regional economic growth; and advance environmental justice for all U.P. residents.

Importantly, this report is part of a larger conversation. It is informed by the Task Force's initial focus on analyzing the U.P.'s use of propane and what a propane supply disruption might mean to residents and businesses. That work was summarized in the Task Force's April 2020 Part I report to the Governor.

This second Task Force report will also inform broader ongoing discussions about Michigan's energy future across our two peninsulas, including those that will shape the MI Healthy Climate Plan. To be developed by the Department of Environment, Great Lakes, and Energy (EGLE) with support from the recently appointed Council on Climate Solutions, the Plan will serve as Michigan's roadmap to fulfilling Governor Whitmer's commitment to 100% economy-wide decarbonization by 2050. Understanding how to make this transition work in all areas of our state will be key to this effort, and the work of this Task Force will help ensure the U.P.'s unique energy realities, needs, and concerns remain front and center in that process.

I want to thank the 19 members of the Task Force whose hard work made this report possible. They gave freely of their time, expertise, and creative thinking and remained steadfastly committed to our mission despite the uncertainty and upheaval of the COVID-19 pandemic. They deserve the thanks of all Michiganders for their service.

Many others also contributed to this report and its recommendations by giving technical presentations at the Task Force's ten virtual meetings and/or providing public comment. Their civic-mindedness, engagement, and insights into the U.P.'s complex energy systems were invaluable and demonstrated why we achieve the best outcomes when all voices and perspectives are heard.

As Task Force deliberations made clear, delivering affordable, reliable, secure, and environmentally sound energy solutions for U.P. families and businesses will not be easy. But as Governor Whitmer frequently says, Michiganders know hard work and are up to the task. If anything, that's especially true for those who call the U.P. home. May this report provide sound direction for that hard work.

Liesl Eichler Clark

Chairperson, U.P. Energy Task Force

Director, Michigan Department of Environment, Great Lakes, and Energy

U.P. Energy Task Force members

Name	Role/Title
Liesl Eichler Clark	Director, Department of Environment, Great Lakes, and Energy (UPETF Chairperson)
Mike Prusi	U.P. Resident (UPETF Vice Chairperson)
Tanya Paslawski[1]	President, Michigan Electric and Gas Association of Lansing (UPETF Secretary)
Kristopher Bowman	President, Bowman Gas Company
David Camps	Owner/Operator, Blue Terra Energy, LLC
Mike Furmanski[2]	Electrical Superintendent, City of Escanaba
Tom Harrell	U.P. Resident
Jennifer Hill	Marquette City Commissioner, contractor with Citizens Utility Board of Michigan
Douglas Jester	Partner, 5 Lakes Energy
Aaron D. Johnson, P.E.[3]	Region Engineer, Michigan Department of Transportation - Superior Region
James Kochevar	General Manager, Cleveland-Cliffs
Michael Larson	UP Operations Manager, Michigan Energy Options
Mike Nystrom	Executive VP/Secretary, Michigan Infrastructure & Transportation Assoc.
Anthony Retaskie	Exec. Director, UP Construction Council
Maj. General Paul Rogers	Adjutant General and Director, Department of Military and Veteran Affairs
Dan Scripps	Chair, Michigan Public Service Commission
Dr. Roman Sidortsov	Assistant Professor of Energy, Michigan Technological University
Chris Swartz	President, Keweenaw Bay Indian Community; tribal council member
Tonya Swenor	Program Manager, Superior Watershed Partnership

[1] Tanya Paslawski is now a senior consultant at 5 Lakes Energy
[2] Mike Furmanski is now general manager of Alger Delta Electric Cooperative
[3] Michigan Department of Transportation Director Paul Ajegba's designee

Report and Recommendations

Section I – Assess the U.P.'s overall energy needs and how they are currently being met

Demographics

The U.P. is home to approximately 300,000 residents in an estimated 130,000 households. The overall population estimates for the U.P. have been relatively consistent since the beginning of the 20th century; however, the population has steadily fallen from its peak in 1920. Demographers estimate that by 2040, the population will decline by an additional 13,000. The region's overall population is also aging, with the proportion of the population age 75 and older projected to double in the coming years.

While overall the population is dropping, urban areas in Houghton and Marquette Counties have grown from 2000 to 2017. The remaining 13 U.P. counties have all experienced population declines over the same period. The U.P. has also seen growth in the number of seasonal housing units constructed. Overall, seasonal housing accounts for 22 percent of all housing units and up to 50 percent in certain counties.

Home Energy Use Characteristics

57 percent of U.P. households use natural gas as the primary fuel source for home heating (Census Bureau 2019). Despite being the dominant fuel source for home heating, natural gas service is not available everywhere in the U.P., and many households outside of more populous areas are still reliant on propane, electricity, wood, or other deliverable fuels for their heating needs (Winkler 2019). Propane is the second most prevalent source of home heating fuel in the U.P. (this topic is discussed at length in the Phase I report). Over 10 percent of households rely on electricity for their home heating needs, with the remaining population using wood, fuel oil, or other fuel sources, see table below.

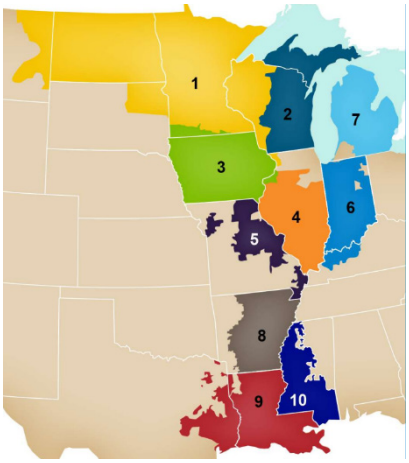
Percentage of Households by Primary House Heating Fuel in the U.P.

Fuel Type	Households	Percentage
Utility gas	71,353	57.1%
Bottled, tank, or LP gas	24,057	19.3%
Electricity	12,947	10.4%
Fuel oil, kerosene, etc.	3,497	2.8%
Coal or coke	57	<0.1%
Wood	11,281	9.0%
Solar energy	17	<0.1%
Other fuel	1,137	0.9%
No fuel used	608	0.5%
Total	124,954	100%

(Source: U.S Census Bureau, December 2020)

U.P Energy Supply

Electricity



In terms of the U.P.'s electric supplies, there is limited interconnection between the Upper and Lower Peninsulas. Instead, the U.P.'s electric system is closely integrated with Wisconsin's and together they form the Midcontinent Independent System Operator (MISO) Zone 2. MISO is the regional transmission organization (RTO) that oversees the power grid for customers in 16 states from Minnesota to Louisiana (see MISO footprint pictured to the right). MISO is responsible for ensuring safe and reliable operations for the electric grid. It also operates regional markets to coordinate the supply of electricity to meet demand and oversees transmission planning throughout its footprint (MPSC June 2020).

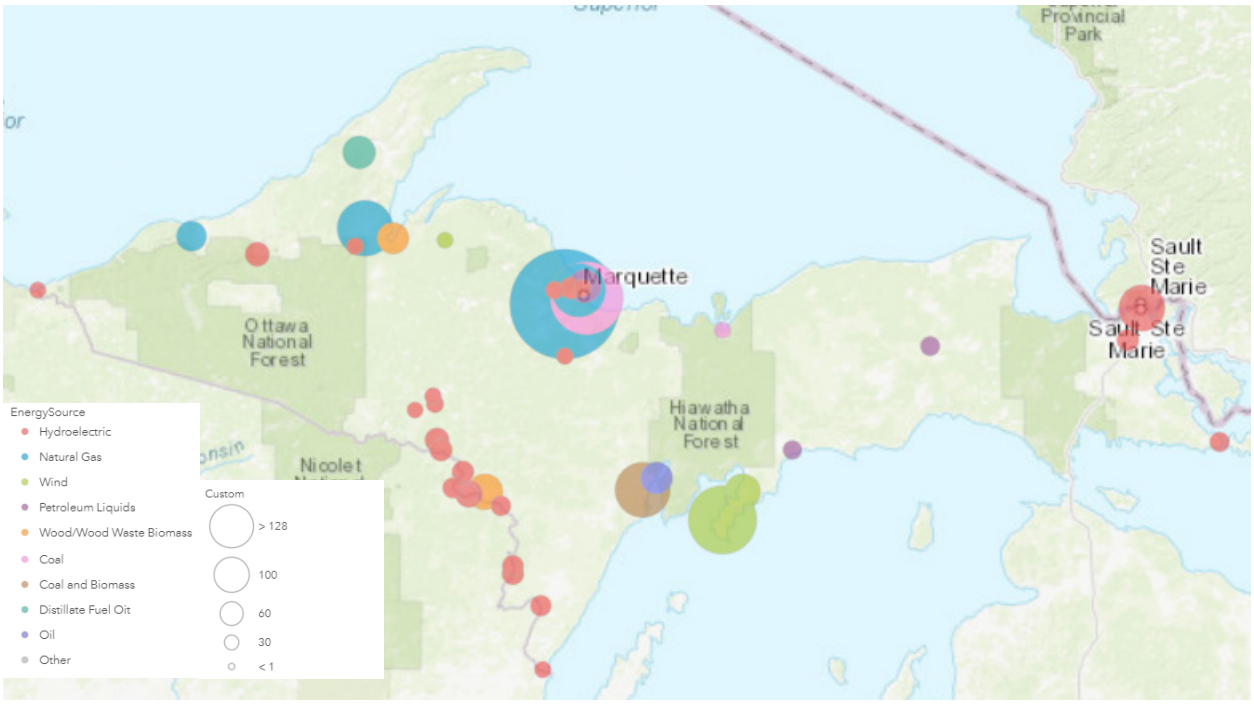
MISO provides oversight for the U.P.'s electric grid, but the actual transmission infrastructure in the U.P. is owned and operated by American Transmission Company (ATC) and Xcel Energy. The transmission system transports electricity at high voltages for long distances and is regulated by the Federal Energy Regulatory Commission. ATC's transmission network extends throughout the U.P., Wisconsin, Minnesota, and Illinois and covers nearly every U.P. county, with the exception of the far western portions of Gogebic and Ontonagon Counties, which are served by Xcel Energy (Copp June 2020).

Electric Generation

Nearly three-quarters of the U.P.'s electricity needs are provided by generation sources located within the state. Electric utilities serving U.P. customers are responsible for 51 percent of U.P. electricity production. The majority of that electricity—89.8 percent—is produced by natural gas and hydroelectric facilities. The remaining production comes from a mix of wind, woody biomass, and other sources. Industrial combined heat and power facilities produce approximately 22 percent of the electricity consumed in the U.P. This generation is fueled primarily by black liquor, woody biomass, and natural gas (Jester September 2020).[4]

[4] Black liquor refers to the byproduct from industrial paper processing that can be used as a fuel for electricity production.

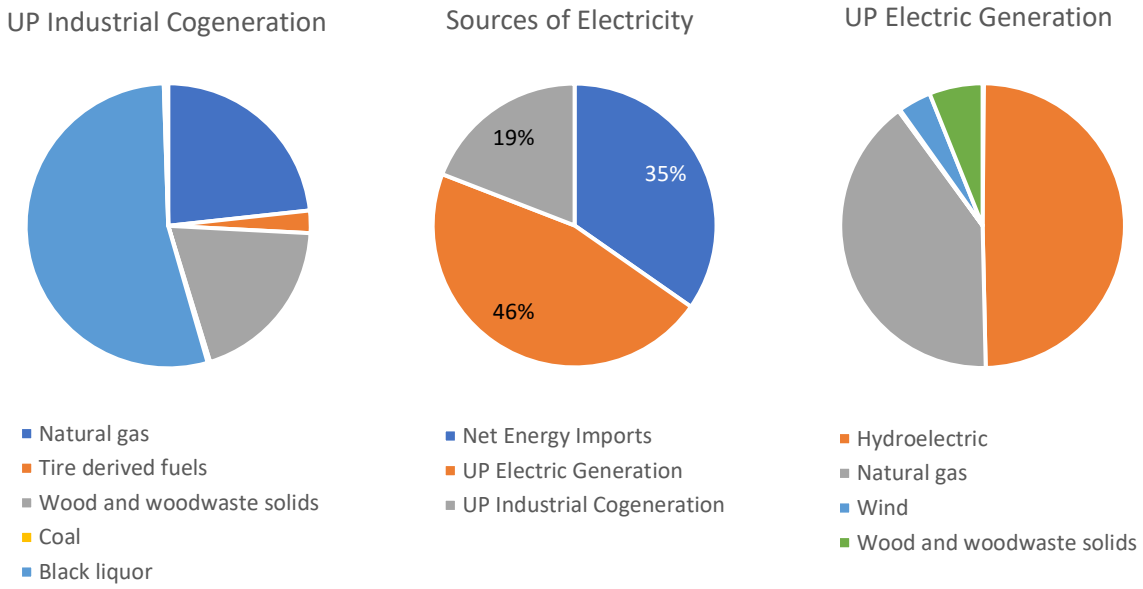
U.P. Electric Generation Resources, Nameplate Capacity (MW), Energy Source



(Source U.S. EIA October 2020 and MPSC May 2020)

The remaining 27 percent of the U.P.'s electricity needs are supplied from sources in Wisconsin via long-term power purchase agreements or market purchases (Jester September 2020). Two of the largest electric utilities in the U.P.—Cloverland Electric Cooperative (Cloverland) and the Upper Peninsula Power Company (UPPCO)—rely on long-term power purchase agreements for more than 50 percent of their electric capacity purchases (UPPCO July 2020 and Cloverland July 2020). In addition, several U.P. municipal utilities belong to joint action agencies, which provide wholesale power supplies for member utilities. Members of WPPI Energy and Great Lakes Utilities are supplied primarily from generation resources located in Wisconsin (Furmanski July 2020).

Electricity Generation, by Sector and by Fuel Type



Sources of Electricity

Energy Source	MWhs	Percentage
Net Energy Imports	1,467,006	34.7%
U.P. Electric Generation	1,952,775	46.2%
U.P. Industrial Cogeneration	807,942	19.1%
Total	**2,760,717**	**100%**

UP Electric Generation

Fuel Type	MWhs	Percentage
Distillate fuel oil	3,037	0.2%
Hydroelectric	966,516	49.5%
Natural gas	786,828	40.3%
Tire derived fuels	4,051	0.2%
Wind	73,752	3.8%
Wood and woodwaste solids	118,590	6.1%
Total	**1,952,775**	**100.0%**

UP Industrial Cogeneration

Fuel Type	MWhs	Percentage
Natural gas	188,074	23.3%
Tire derived fuels	20,575	2.5%
Wood and woodwaste solids	156,918	19.4%
Coal	2,295	0.3%
Black liquor	436,065	54.0%

Fuel Type	MWhs	Percentage
Residual fuel oil	2,405	0.3%
Sludge waste	1,610	0.2%
Total	**807,942**	**100.0%**

(Source: U.S. EIA January 2021)

The U.P.'s electric portfolio has undergone a major shift in recent years. In 2014, several electric providers sought to retire older fossil fuel plants, but the proposed retirements had to be reviewed by MISO to ensure the electric grid's reliable operation. In the case of three U.P. coal-fired facilities—Escanaba, Presque Isle, and White Pine—MISO determined that to maintain the grid's reliability, the plants could not be retired until other system upgrades were completed. These three facilities were labeled system support resources (SSR) and were required to operate until other reliability upgrades could be made. The designation of these resources as SSR not only resulted in increased costs for U.P. customers (estimated to be as much as 20 percent for some customers), but also highlighted the precarious nature of the U.P.'s energy security and raised concerns about over-reliance on Wisconsin.

In response, policymakers and other stakeholders sought to address the U.P.'s pressing energy challenges. One result was the creation of a new local balancing authority for the U.P. to support better planning and identification of actions necessary to meet the unique challenges of the U.P.'s electric grid. Additionally, utilities and state regulators were able to implement a plan to create a new U.P.-only utility called Upper Michigan Energy Resources (UMERC) for customers formerly served by Wisconsin Electric Power Company and Wisconsin Public Service Company. By April 2019, UMERC constructed two new natural gas generating facilities housing nine reciprocating internal combustion engine units that enabled the retirement of the three older coal-fired facilities by providing a solution to reliability concerns (MPSC May 2020).

The State of Michigan has also reviewed transmission expansion options to address the U.P.'s electricity needs. Historically, the U.P.'s geography has limited interconnection with Ontario and the Lower Peninsula. Policymakers worked with MISO to study the potential benefits in terms of cost savings, reliability, and resource adequacy of new transmission interconnections between Ontario or the Lower Peninsula. The study determined that new generation cited in the U.P. provides comparable benefit to new transmission interconnections, and that the benefits of new transmission investment were not enough to outweigh the high costs to construct the line (MPSC May 2020).

Electric Providers

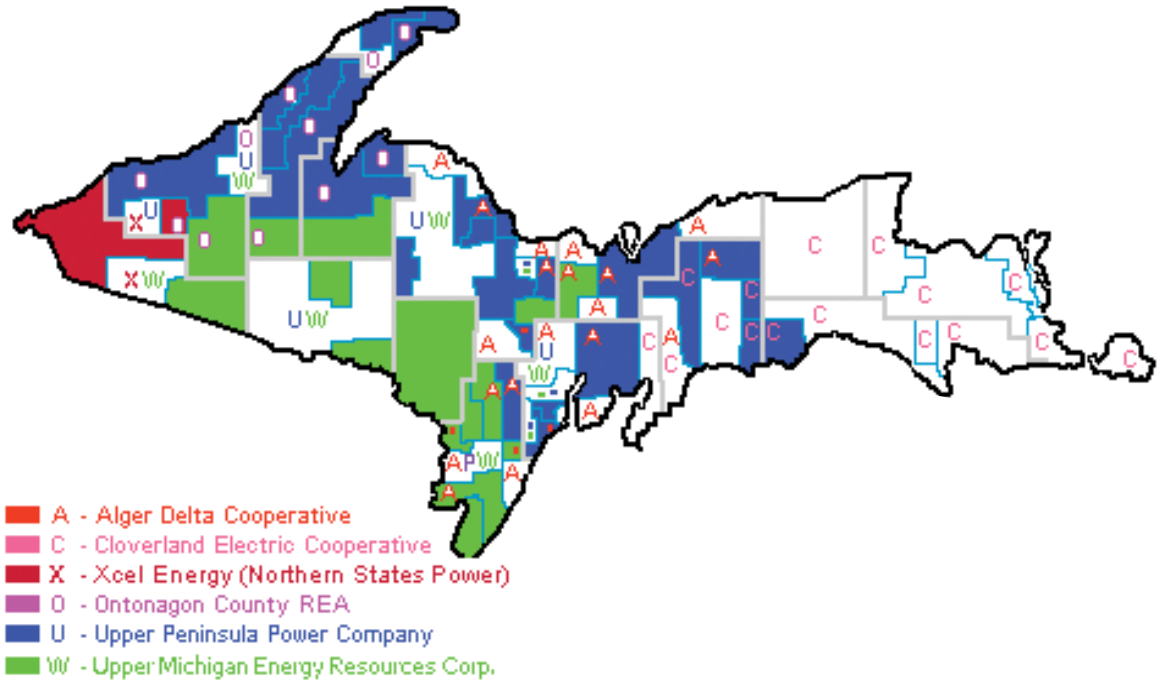
There are 19[5] different electric service providers in the U.P.: three investor-owned utilities (IOUs), four electric cooperatives, and 12 municipal entities (MPSC May 12, 2020).[6] IOUs are

[5] Wisconsin Electric Power Company is not included in the count of electric service providers as the company serves one industrial customer in the state.

[6] IOUs are public utilities owned by shareholders, cooperatives are member-owned and managed by an independent board, and municipal utilities are publicly owned and can be an integrated department within a local unit of government or separate entity with an independent board.

regulated by the Michigan Public Service Commission (MPSC), which has oversight for setting rates, ensuring reliability, and achieving other state policy objectives like renewable energy standards and energy-efficiency targets. Municipal utilities and cooperatives are not subject to the same type of state oversight and are instead governed by their respective boards. However, they have historically been required to meet Michigan's renewable energy and energy-efficiency requirements. A map of investor-owned and cooperative electric providers is presented below.

Electric Distribution Utilities in the U.P.



(Source: MPSC n.d.)

Electric utilities range in size from Bayfield Electric Cooperative—which serves just 69 customers in the far western U.P.—to UPPCO, which serves more than 50,000 customers in ten U.P. counties[7] and is the largest investor-owned utility. Overall, there are nearly 170,000 residential electric customers in the U.P., 25,000 commercial customers, and just 133 industrial customers. The following table provides a breakdown of electric customers by utility provider.

[7] Bayfield Electric Cooperative is headquartered in Iron Mountain, Wisconsin. Michigan customers represent less than 1 percent of their customer base. Accessed February 10, 2021. https://www.bayfieldelectric.com/

Number of U.P. Customers by Electric Distribution Utility

Utility	Ownership	Residential	Commercial	Industrial	Total
Alger-Delta	Cooperative	9,540	548	1	10,089
Bayfield Electric	Cooperative	69	0	0	69
City of Crystal Falls	Municipal	1,332	271	0	1,603
City of Escanaba	Municipal	6,037	1,173	35	7,245
City of Gladstone	Municipal	2,726	442	0	3,168
Marquette Board of Light and Power	Municipal	15,048	2,182	0	17,230
City of Negaunee	Municipal	1,964	270	0	2,234
City of Norway	Municipal	1,846	248	0	2,094
City of Stephenson	Municipal	381	116	1	498
City of Wakefield	Municipal	976	101	2	1,079
Cloverland Electric	Cooperative	35,125	7,337	9	42,471
Newberry Water & Light Board	Municipal	1,188	227	0	1,415
Northern States Power Company	Investor-owned	7,582	1,358	2	8,942
Ontonagon County R E A	Cooperative	4,507	357	4	4,868
Upper Michigan Energy Resources Corporation	Investor-owned	32,790	3,994	34	36,818
Upper Peninsula Power Company	Investor-owned	46,742	6,103	44	52,889
Village of Baraga	Municipal	527	223	0	750
Village of Daggett	Municipal	116	19	0	135
Village of L'Anse	Municipal	981	195	0	1,176
Wisconsin Electric Power Company	Investor-owned	0	0	1	1
Total	**NA**	**169,477**	**25,164**	**133**	**194,774**

(Source: U.S. EIA October 2020)

Though 87 percent of U.P. customers are residential, they are responsible for only 26 percent of U.P. electricity sales. Industrial customers are the majority, with nearly 52 percent of all electricity sales. The average U.P. residential customers consumes 6,458 kWh per year. Compared to average consumption for the entire state, U.P. residents consume 15 percent less electricity per year (U.S. EIA October 6, 2020).

Electric Rates

U.P. residents may consume less electricity than the average Michigan household, but many pay higher average rates. In fact, residential rates for Bayfield Electric Cooperative, Ontonagon County Rural Electrification Association (REA), UPPCO, and Alger Delta Cooperative are among the 50 highest electric rates for utilities in the continental United States and more than 30 percent higher than the statewide average. UPPCO's residential rates in particular were a consistent focus of public comment and task force discussion throughout the task force process. On the whole, U.P. residential electric rates are one cent higher than those of electric providers in the Lower Peninsula. Still, 13 providers have residential rates that are below the statewide average.

Commercial rates are generally lower than residential rates, except for two small municipal utilities. Though lower overall, average commercial rates for U.P. providers are still nearly 10 percent higher than statewide averages.

Average U.P. industrial rates are over 25 percent lower than the statewide average. The three U.P. IOUs—UPPCO, UMERC, and Northern States Power Company (NSPCo)—have the lowest industrial rates of all electricity providers in the state and among the 50 lowest industrial rates of rates of all IOUs nationwide.[8] These utilities also have the greatest differential between residential and industrial rates. UPPCO residential rates are four times higher than industrial rates. UMERC and Ontonagon County REA residential rates are nearly three times higher and NSPCo residential rates are just under two times higher than industrial rates. A full summary of average electric prices by utility and sector is provided in the table below.

Average of U.P. Electric Prices, by Utility, by Sector (cents/kWh)

Utility	Residential	Commercial	Industrial
Bayfield Electric Cooperative	30.46	n/a	n/a
Ontonagon County Rural Electrification Association	26.84	25.70	7.44
Upper Peninsula Power Company^	21.97	16.73	5.36
Alger-Delta Cooperative	20.62	15.86	18.99
Marquette Board of Light and Power	16.74	15.01	n/a
City of Negaunee	16.54	12.81	n/a
City of Crystal Falls	15.73	14.43	n/a
City of Norway	15.16	13.35	n/a
Upper Michigan Energy Resources Corporation^	14.10	13.16	5.09
City of Gladstone	13.34	11.54	n/a
Village of Baraga	13.21	12.95	n/a
Cloverland Electric Cooperative	12.91	10.64	8.29
Village of L'Anse	12.63	12.50	n/a
City of Escanaba	12.42	9.85	8.17

[8] Northern States Power Company is a subsidiary of Xcel Energy which serves customers in eight states from Michigan to Colorado.

Utility	Residential	Commercial	Industrial
Northern States Power Company^	12.29	10.99	6.31
City of Stephenson	10.80	11.88	10.67
City of Wakefield	10.67	10.04	11.89
Village of Daggett	10.65	10.77	n/a
Newberry Water & Light Board	10.44	7.53	n/a
Wisconsin Electric Power Company^	n/a	n/a	6.42
Upper Peninsula Average	16.80	13.32	6.55
Lower Peninsula Average	15.75	12.07	8.94
Michigan Average	15.79	12.13	8.89
Wisconsin Average	14.23	10.81	8.74

^ Investor-owned utility
(Source: U.S. EIA October 2020)

Natural Gas

Natural gas is the largest source of energy for home heating in the U.P. and supplies a growing share of the region's electricity generation. There is minimal natural gas production capacity in the U.P., so customers rely on outside resources to meet their needs. Since the U.P. also lacks the natural gas storage fields prevalent in the Lower Peninsula, it is instead supplied by three interstate pipelines.

- Great Lakes Gas Tranmission, owned by TC Energy, originates in Western Canada and ships natural gas through the U.P. to Sault Ste. Marie and ultimately across the Straits of Mackinac to the Lower Peninsula (Trans Canada 2016).
- ANR Pipeline, also owned by TC Energy, transports natural gas from Texas, Oklahoma, and Lousiana through Wisonsin before it enters the U.P. near Menominee and Iron River (TC Energy 2020).
- Northern Natural Gas Company also operates a natural gas pipeline serving the U.P. The pipeline begins in Texas and travels through Minnesota and Wisconsin before entering the U.P. This pipeline has sections that reach Ontanagon, Houghton, and Marquette (Northern Natural n.d.).

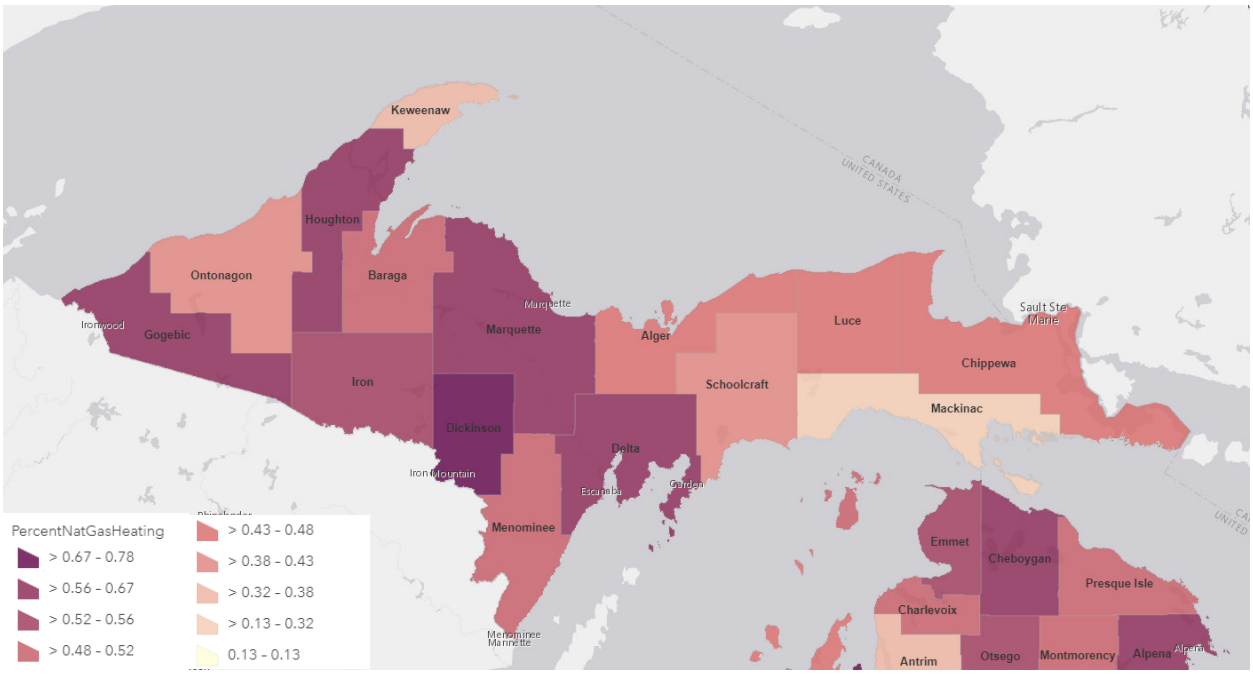
Natural Gas Transmission Network

(Source U.S. EIA April 2020)

The residential sector is the primary end user of natural gas in Michigan, representing over 34 percent of total volume consumed. Natural gas can be used for space heating, water heating, cooking, and use in other appliances. Natural gas is used by 57 percent of U.P. households for space heating. Electric power production is the second largest consumer of natural gas in Michigan, with 28 percent of total consumption. There are limited data for natural gas consumption or prices for the U.P. as most information is aggregated at the state level (U.S. EIA January 2021).

The percentage of U.P. households using natural gas has remained relatively consistent over the past decade despite a decline in the overall population. Only four counties—Marquette, Houghton, Kewenaw, and Gogebic—experienced an increase in the number of households using natural gas during this period. The U.P. still lags behind the statewide average in terms of the portion of the population using natural gas.

Percentage of Customers Using Natural Gas for Home Heating

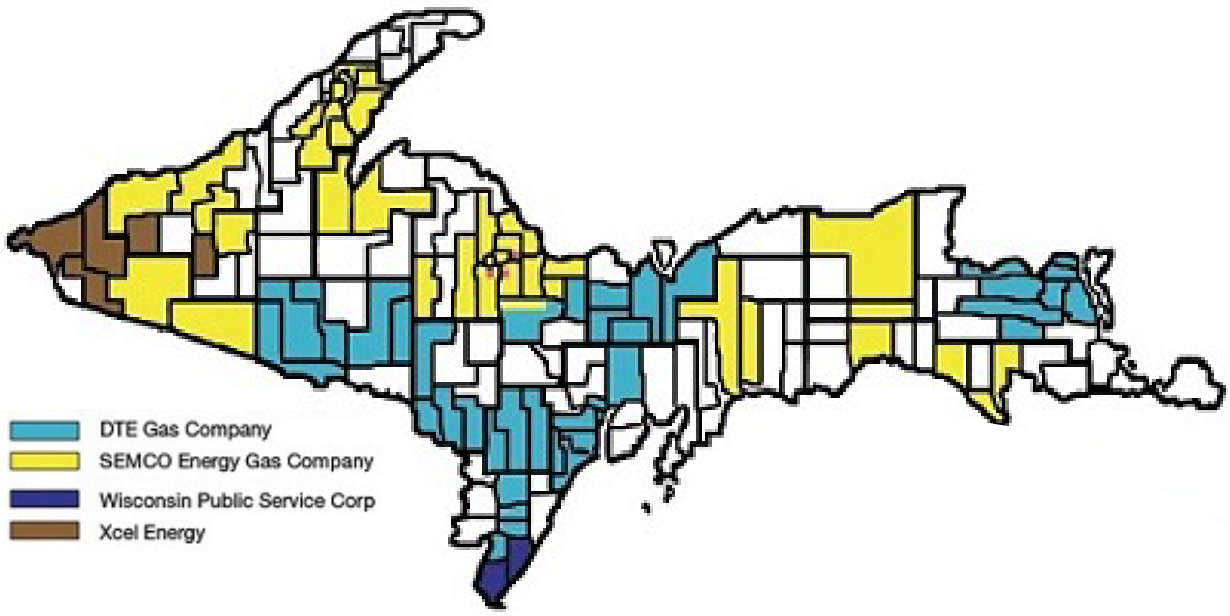


(Source U.S. Census Bureau)

Natural Gas Providers

There are four natural gas distribution utilities serving the U.P. SEMCO ENERGY Gas Company and DTE Gas Company have the most expansive service territories spanning multiple counties. Xcel Energy and UMERC provide service to smaller service territories along the Wisconsin border. SEMCO and DTE Gas provide service for customers in both the Upper and Lower Peninsulas. The MPSC regulates these utilities, overseeing the rates they charge consumers and other service conditions to ensure safe and reliable operations.

Natural Gas Distribution Utilities in the U.P.



(Source: MPSC January 2011)

Unlike the electric industry, which provides near universal service throughout the U.P., the natural gas system developed using a different model. When new customers want to receive natural gas service, companies will evaluate the cost of the new service connection and determine whether the customer will have to pay for the cost of extending the service. Generally, if the costs to serve a new customer are greater than the projected revenues from the customer, a utility will require a customer to pay the difference, making some service expansions unfeasible (NARUC 2017).

Natural Gas Rates

DTE Gas has the highest residential rates, followed by SEMCO. Both companies' rates are higher than the statewide average. UMERC and Xcel Energy rates are below average for the state. A summary of natural gas rates for regulated utilities is provided below.

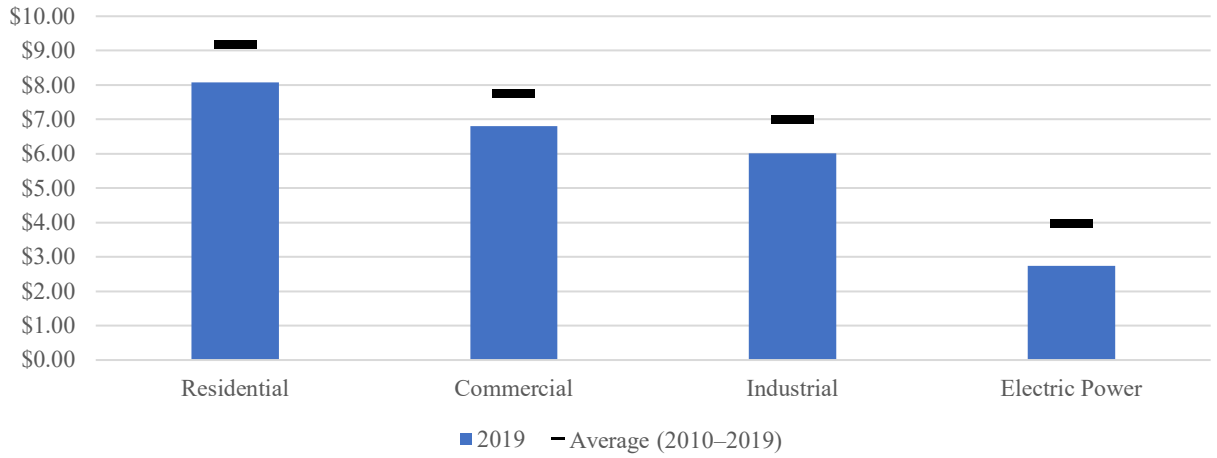
Natural Gas Rates for Residential Customers

Utility	Monthly Charge	Distribution Charge	Gas Cost Recovery Factor	Total Volumetric Charge	Monthly Bill (100 Ccf)	Compared to average
Consumers Energy	12.6	0.44579	0.21404	0.65983	$78.58	21%
DTE Gas Company	12.69	0.43944	0.225	0.66444	$79.13	22%
Michigan Gas Utilities	13	0.16377	0.30156	0.46533	$59.53	-9%
SEMCO Energy Gas Company	12.44	0.26488	0.299	0.56388	$68.83	6%
UMERC	5	0.09354	0.31562	0.40916	$45.92	-29%
Xcel Energy	11	0.21645	0.25816	0.47461	$58.46	-10%
Average Rate	11.12	0.27065	0.2689	0.53955	$65.08	0%

(Source MPSC February 2021)

Rates charged by natural gas utilities are regulated by the MPSC and vary by customer class. Rates for commercial and industrial customers may also change based on the amount of consumption. Overall natural gas rates for commercial and industrial customers are lower than those for residential customers. Average prices for natural gas in 2019 were below average compared to the period from 2010–2019.

Average Price (per Mcf) of Natural Gas Delivered to End-use Customer, by Sector



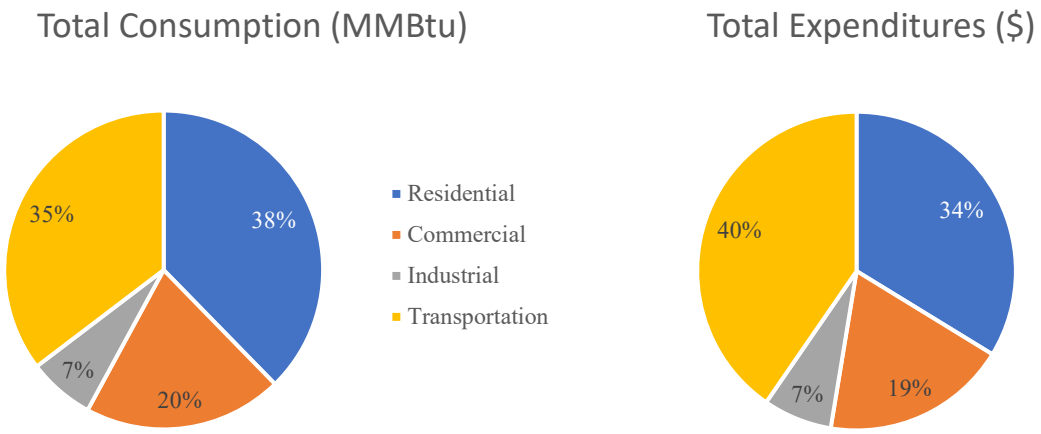
Sector	2019	2018	Average (2010–2019)
Residential	8.08	8.19	9.18
Commercial	6.81	6.91	7.77
Industrial	6.01	5.98	7.00
Electric Power	2.74	3.4	3.97

(Source U.S. EIA January 2021)

Transportation

The transportation sector accounts for 35 percent of total energy consumption in the U.P. measured by million British thermal units (MMBtus) and 40 percent of the U.P.'s total energy expenditures. U.P. residents and businesses spent over $350 million on transportation fuels in 2018, nearly all which comes from traditional motor fuels—gasoline and diesel (Jester September 2020). As with other fossil fuel resources, the U.P. has no oil production or refining capacity, so it must import all of its gasoline and diesel fuels. There is limited use of alternative fuels such as propane, biodiesel, and electricity, but together these fuels make up less than 1 percent of transportation fuels used in the U.P.

U.P. Energy End Use by Sector



Total Consumption

Sector	Total (Mmbtu)	Percentage
Residential	17,838,874	37.7%
Commercial	9,568,970	20.2%
Industrial	3,191,998	6.7%
Transportation	16,724,290	35.3%
Total	47,324,132	100.0%

Total Expenditures

Sector	Total (dollars)	Percentage
Residential	296,270,969	33.7%
Commercial	165,522,714	18.9%
Industrial	61,464,182	7.0%
Transportation	354,663,935	40.4%
Total	877,921,800	100.0%

(Source: Jester September 2020)

Section II – Recommendations for energy supply and distribution in the U.P.

Introduction

The primary purpose of this report is to ensure the state has explored the various factors or situations that contribute to high costs and insecurity for U.P. customers energy supply. The task force's recommendations provide a roadmap for actions the state could take to improve affordability, enhance reliability, and promote energy security for U.P. residents.

Promote Coordinated Planning for U.P. Energy Providers

The U.P. has faced many challenges in relation to energy supplies in recent years. For a time, a sharp increase in power plant retirements raised prices for U.P. customers to keep aging facilities online. Utilities have since begun a considerable shift to natural gas generation as well as wind and solar energy. Major investments are still needed for the region's aging distribution grid, but as previously noted, many customers already have higher than average electricity rates. The problem is further exacerbated by the region's declining population rate. Fewer consumers and a stagnant overall demand for energy drive up already high rates and generate customer interest in investing in their own generation resources, like rooftop solar.

Task force members raised a compounding issue: the lack of coordination between the region's electricity providers. As discussed above, 19 different electric utilities serve approximately 190,000 U.P. consumers, with service populations ranging from as few as 69 customers to more than 50,000 customers. U.P.-based utilities also vary in terms of their ownership model, service territories, and generation resources.

Task force members expressed that the patchwork of utility providers and the disparity in costs between them present a challenge for region's energy system and the ability to achieve other priorities such as greater energy-efficiency investment, more renewable energy deployment, and affordability.

Given the variation among U.P. utilities and the reality that the MPSC has limited authority over municipal and electric cooperatives, developing a coordinated plan for the region's electric supply will require willing participation from all 19 utilities to be a success.

Recommendation 1: The administration should encourage all U.P. electric providers to participate in a region-wide electric plan covering the full U.P. This planning effort should encompass all aspects of the U.P.'s electric supply, including forecasting electricity demand, evaluating generation needs, assessing grid reliability, mapping utility service territories, and identifying opportunities and incentives for collaboration amongst providers.

In light of changing consumer preferences and behaviors, technology, and policies, those charged with maintaining the electric grid are faced with new challenges to providing the same reliability, security, safety, and resilience that society has come to count on. The proliferation of distributed energy resources has the potential to dramatically change the way the electric grid is designed and operated. To prepare for this transition, utilities will need to consider how to align

their planning processes with changing customer demands and new technology while continuing safe and reliable operations of the physical system.

The MPSC has already undertaken efforts to enhance grid modernization in the state through the MI Power Grid stakeholder process. Stakeholders and Commission staff are examining grid security and reliability standards, the role of electric distribution planning in coordination with other planning efforts, and the integration of new technologies.

Recommendation 2: The MPSC should encourage U.P. investor-owned utilities to develop distribution plans, similar to those developed by other investor-owned utilities in the state, in order to provide greater transparency for individual investments. These planning efforts will support grid modernization investment, improve reliability, and enable the deployment of advanced energy solutions. The Commission has limited authority over municipal and electric cooperatives—which serve nearly half of all U.P. customers—and so should work to engage these utilities in stakeholder processes on a voluntary basis.

Expand Opportunities for Energy Waste Reduction in the U. P.

Since 2009, electric and natural gas utilities in Michigan, including those serving the U.P., have been offering energy efficiency programs to their customers in compliance with Public Act (PA) 295, the Clean, Renewable and Efficient Energy Act of 2008, and now PA 342 of 2016, the Clean and Renewable Energy and Energy Waste Reduction Act. These statutes require, among other criteria, that utilities achieve electric energy savings equal to 1 percent of their annual sales and natural gas savings equal to 0.75 percent of annual sales.[9] Barring a few exceptions, most utilities in the U.P. deliver programs through one of two implementation contractors—Efficiency UNITED, the designated statewide administrator for programs, and the Michigan Electric Cooperative Association (MECA) (PSC December 2018).

Historically, utilities have met or exceeded the savings targets. To date, energy waste reduction (EWR) targets represent over 40 million kilowatt-hours (kWh) and 60,000 Mcf savings to U.P. residents and businesses. In addition to energy savings, EWR programs have been shown to improve customer engagement and satisfaction, provide economic development benefits, and promote better health for participants and communities (MEEA October 2016).

To date, the requirement to offer programs with spending or savings targets have applied to all utilities in the state. This requirement expires at the end of 2021 for utilities not subject to rate regulation by the MPSC, which includes electric cooperatives and municipal utilities. While there is interest in these entities continuing to offer programs after the sunset date, this is especially important in the U.P. because of the proportion of customers served by these utilities. Statewide, electric cooperatives and municipal utilities account for 13 percent of customers and

[9] PA 295 provided an alternative path for compliance. Utilities could opt to invest 2 percent of revenue for implementation by a statewide program administrator. The MPSC selected Efficiency United as the statewide administrator. Generally, Efficiency United delivers savings that meet or exceed the statutory targets for each participating utility.

12.5 percent of electric sales, but in the U.P., these utilities account for 49 percent of customers and 33 percent of electric sales.

If these electric cooperatives and municipal utilities do not continue their participation in energy efficiency programs when the requirement expires at the end of the year, there are several possible negative consequences. The programs of investor-owned utilities are supported by shared retail partners and trade allies that support the market as it has developed over the past decade. Moreover, customers served by electric cooperatives and municipal utilities may find themselves in a similar situation as residents who use propane and other deliverable fuels: without access to technical assistance and financial incentives to make their homes and businesses more energy efficient. It is unclear whether or which electric cooperatives and municipal utilities will choose to continue programs or if programs will be scaled back.

Some utilities have recognized the benefits of offering programs beyond the statutory requirements. These services are valued by their membership and customers because they make energy more affordable for customers that participate in programs and can help businesses lower operating costs. EWR programs also create jobs directly for local trade allies that provide home upgrades and energy-efficient equipment. Dollars that would have been spent on imported energy can be spent instead in the local economy for goods and services, providing additional indirect job creation.

The number of utilities serving U.P. residents has also presented challenges for EWR program delivery and for customers. Efforts to build customer awareness, engage retailers and trade allies, and administer programs benefit from economies of scale. The rural nature of the U.P. can make it harder to reach customers, which is documented in a recent study conducted for The Department of Environment, Great Lakes, and Energy's (EGLE) Sustainability Section.[10] For utilities with different program offerings and requirements for participation, trade allies that serve customers across service areas must be familiar with the nuances of each program. Utilities have begun a collaboration process in an effort to reduce program costs, make participation easier for customers and trade allies, and expand program reach. Those efforts may be thwarted if many of the electric cooperatives and municipal utilities, who serve half the customers in the U.P., discontinue programs.

The MPSC is sponsoring a housing stock study in the Upper Peninsula as a companion to a study being conducted on behalf of the utilities in the Lower Peninsula.[11] The U.P. Housing Stock Study will provide better understanding of characteristics that determine energy use, such as age of home, insulation levels, type of windows and doors, air infiltration levels, efficiency of space conditioning and water heating equipment, and saturation of high-efficiency technologies such as lighting and appliances. This study, delayed by the COVID-19 pandemic, will identify the areas

[10] Public Sector Consultants (PSC) and American Council for an Energy-Efficient Economy (ACEEE). July 2019. Baseline Assessment and Policy and Program Evaluation. Accessed February 18, 2021. https://www.michigan.gov/documents/energy/BaselineReportFinal_668264_7.pdf

[11] This is being presented at the February EWR collaborative and a link should be available by the time this report is circulated as a draft.

of greatest energy-efficiency potential, but will likely not be available before electric cooperatives and municipal utilities make critical decisions about program implementation after 2021.

Future assessments of EWR potential should consider the results of the U.P. Housing Stock Study and programs should seek to target energy efficiency in the areas of greatest opportunity. Utilities should seek opportunities to partner in program delivery and to leverage funding by pursuing clean energy grants and helping participants access low-interest financing. This will also serve to expand impacts and help demonstrate to utilities the cost-effectiveness of energy-efficiency initiatives. Past estimates of energy-efficiency opportunities in the Upper Peninsula indicate over $250 million in potential net benefits for U.P. utilities and their customers if all cost-effective and achievable energy waste reduction is captured from 2017 to 2036. (GDS Associates 2017). If programs for half of U.P. customers end in 2022, those benefits are significantly reduced.

Recommendation 3: The MPSC should carefully review EWR plans and integrated resource plans (IRP) of investor-owned utilities in the U.P., to ensure that utilities are seeking to capture all cost-effective and achievable energy-efficiency potential.

The Michigan Legislature should remove the sunset on requiring electric cooperatives and municipal utilities to offer cost-effective EWR programs and to achieve annual savings at specified target levels. This legislative change should enhance flexibility for electric cooperatives and municipal utilities to reduce administrative costs and reporting requirements in order to provide greater direct savings to customers. The Legislature should also authorize a matching grant program to support EWR programs offered by electric cooperative and municipal utilities.

Financing Energy Waste Reduction

There have been barriers to widespread adoption of financing for clean energy upgrades in the Upper Peninsula. As described in the task force's Phase I report, the U.P. has a large number of households (48 percent) that, while employed, struggle to afford basic household necessities. These households may not qualify for low-income energy assistance or weatherization services provided by federal funding. They may also struggle to qualify for financing, even if energy savings are sufficient to service the debt—combining rebates and financing can make upgrades even more affordable. On-bill financing provides an opportunity to consider additional factors in the lending process, but utilities in the U.P. have been hesitant to adopt such programs, in part because their existing billing systems are not configured to support it.

Recommendation 4: EGLE should define opportunities to provide grant funding or other resources—such as revolving loan funding dedicated to the U.P.—to expand access to energy investments and to enable customers to obtain financing for substantial and cost-effective upgrades. Additionally, federal resources can be a major source of low-cost financing or grant dollars. State or federal resources could also be used to expand the Michigan Saves trade ally network in the U.P. to support the development of qualifying projects and to support the economic development recommendation related to expansion of clean energy jobs. Finally, State

or federal resources could be used to help utilities make necessary billing system modifications to allow for on-bill financing/servicing.

The MPSC should convene investor-owned utilities to further explore opportunities to utilize the ability under Public Act 342 of 2016 for these utilities to offer on-bill financing for their customers.

Energy Waste Reduction for Propane Users

As noted, EWR programs have not been available to propane customers. The Michigan Legislature passed Public Act 332 to create a Propane Commission in Michigan and to authorize a surcharge to fund propane customer education, promotion of high-efficiency equipment, and other outreach.[12] Adoption of the provisions of the legislation is subject to a vote by retail propane providers, but if approved, retail providers will begin to collect one-tenth of a cent on each gallon of propane sold and will remit those funds to the Michigan Department of Agriculture and Rural Development (MDARD) to fund the work of the Propane Commission. The initial funding to support efficiency improvements in the U.P. would be minimal at first.

One way that funding for efficiency could be quickly and efficiently dispersed would be to partner with entities already delivering efficiency programs to homes and businesses. Combining propane efficiency funding with electric efficiency funding allows a whole-building approach to efficiency improvements and deep energy retrofits. In Phase I, the U.P. Energy Task Force identified the counties with highest propane use. The counties where electric service is provided by electric cooperatives and municipal utilities have some of the highest rates of propane heating. This opportunity is diminished if programs in those areas end. However, if programs are extended, this dual-fuel program delivery can be enhanced by pairing energy-efficiency education and incentives with low-interest financing.

Recommendation 5: EGLE and MPSC should work with the MDARD once the Propane Commission is operational to demonstrate the value of EWR programs, provide technical support, and encourage the Propane Commission to consider ways to maximize the program's funding and impact. The Propane Commission should also consider opportunities to integrate implementation of efficiency initiatives targeted to propane users with other program providers that serve electric and natural gas utilities as well as providers who conduct low-income home weatherization work to ensure comprehensive services that deliver meaningful savings.

Support Renewable Energy Development

Renewable energy has long played an important role in the U.P.'s power generation portfolio, with some of the region's hydroelectric facilities dating back to the early 1900's. Today, hydroelectric power plants make up nearly 25 percent of all electric generating capacity in the region and are responsible for nearly 50 percent of electric utilities' energy production (Jester September 2020). The U.P. is home to more than 20 hydroelectric facilities producing electricity

[12] State of Michigan. December 29, 2020. *Public Act 332 of 2020.* Accessed February 18, 2021. https://www.legislature.mi.gov/documents/2019-2020/publicact/pdf/2020-PA-0332.pdf

with nameplate capacity ranging from 1 megawatt (MW) to over 40 MWs, totaling nearly 185 MWs of capacity (U.S. EIA October 2020a).

Customer-owned renewable energy, particularly rooftop solar, has been on the rise in the U.P. over recent years. The region's three regulated investor-owned utilities offer distributed generation programs as required by PA 295 of 2008. Municipal and electric cooperatives also offer distributed generation for their customers, but these programs are not overseen by the MPSC. By far, the highest participation rate for distributed generation programs has been in UPPCO's service territory. UPPCO was the first utility to reach the 1 percent program participation cap and subsequently expanded the program capacity to 2 percent of its average in-state customer load. Even with the expansion of UPPCO's program, the utility is still approaching full participation, with just 4 percent capacity remaining in its program for small-scale distributed generation as of December 1, 2020 (MPSC December 2020).

Distributed Generation Program Participation, through December 31, 2019

Company	Category One Customers	Category One Nameplate Capacity (kW)	Category One Remaining Capacity (Percent)	Category Two Customers	Category Two Nameplate Capacity (kW)	Category Two Remaining Capacity (Percent)
UPPCo*	186	1,124	17%	7	280	59%
UMERC	49	303	64%	1	23	95%
Xcel	4	25	81%	0	0	100%
Total	**239**	**1,452**	-	**8**	**303**	-

* UPPCO's remaining capacity for Category One customers was only 4 percent as of December 1, 2020.

(Source: MPSC December 2020)

As participation in distributed generation programs grows, utilities and regulators continue to refine how to compensate customers for their contribution to the electric grid. When first established, utility distributed generation programs were based on net metering, which compensated customers for electricity they supplied back to the grid at the retail rate. PA 342 required the MPSC to phase out net metering and establish new rates for distributed generation. To date, UPPCO is the only U.P. utility with an approved distributed generation tariff based on the inflow/outflow billing method.[13]

The MPSC monitors utilities' distributed generation programs and, at the direction of the Michigan Senate, is undertaking a new effort to evaluate rate design options through the MI Power Grid Distributed Energy Resources Rate Design workgroup (MPSC December 2020).[14] Other changes to Michigan's distributed generation programs are also under consideration.

[13] The inflow portion of a customer's consumption is billed at the standard retail rate and the outflow credit for any excess power the customer sends back to the grid is compensated at the supply component of the retail rate.
[14] Senate Resolution 142 of 2020

Proposed legislation in the Michigan House of Representatives would change program participation caps for all utilities, and the MPSC is evaluating how the Federal Energy Regulatory Commission's Order 2222 will impact the state's distributed generation program.[15]

Utility-scale renewable energy sources have been increasing in recent years and are expected to continue to grow as prices continue to drop and consumer demand for clean energy increases. The U.P. is home to one wind farm—Garden Wind, which was completed in 2012-with another (Fairbanks Wind) scheduled to achieve commercial operation in April 2021. Together these projects will provide approximately 100 MWs of capacity (MPSC May 2020). Utility scale solar development has been fairly limited in the U.P. to date. Marquette and Escanaba have recently developed community solar projects and UPPCO has plans to add up to 20 MW of solar before 2023 and is currently pursuing a 22.5 MW solar power purchase agreement and has plans to own 62.5 MW of additional solar generation, but in terms of overall energy production for the U.P. solar generation remains a small percentage of the U.P.'s total generation mix. Investor-owned utilities have plans to continue adding new renewable resources. According to IRPs filed by UPPCO and Northern States Power Company,[16] utilities plan new investments in solar and wind in both the short and long term (MPSC February 2021).

As indicated in the approved IRPs filed by U.P. utilities, renewable energy is a cost-effective resource that can provide a number of potential benefits for the U.P. Increasing the share of renewable energy in the U.P. will promote a cleaner electric grid and potentially reduce electricity costs, as solar and wind can be built for less than traditional coal or natural gas-fired generation. Renewables can also contribute to the local tax base and provide communities with much-needed financial support as well as supporting clean energy jobs within the region. Also, since the U.P. relies on electricity imports for over one-quarter of its electricity, expanding renewable energy development throughout the region can help to make the grid more reliable.

One of the challenges facing renewable energy development in the U.P. has been resistance to siting renewable energy in a community, as evidenced by the experience involving a proposed large solar project in Escanaba Township and that involving a proposed large wind project in L'Anse Township (Minor December 2020 and Raven 2019).

Recommendation 6: EGLE should provide grant funding and technical assistance to regional planning organizations and local communities in the U.P. to support planning and zoning to streamline renewable energy and electric vehicle infrastructure development. This effort should build off the existing Clean Energy and Energy Management Webinar and the Zoning for Renewable Energy Database. EGLE should also provide assistance for communities seeking to support utility scale and customer-owned renewable energy deployment through the development and adoption of zoning ordinances.

[15] Order 2222 would allow distributed energy resources to participate alongside traditional resources in wholesale markets through aggregations, opening U.S. organized wholesale markets to new sources of energy and grid services (FERC September 2020).

[16] Data provided for Northern States Power Company is representative of the Company's entire multistate service territory and may not result in new renewable energy capacity in the U.P. (MPSC February 2021).

Energy Storage

Energy storage is an emerging trend in the electric sector. The potential benefits of energy storage deployment extend across various functions of the grid, from residents and businesses utilizing energy storage solutions with onsite electricity generation to integrating utility scale storage resources with the electric grid to help achieve aggressive targets for renewable energy deployment and carbon reductions while maintaining reliability and affordability.

The growth of energy storage has been precipitated by improving cost-effectiveness driven by technological advancements, which have resulted in increasing deployments. Moreover, storage can support improved adaptability of energy resources, enabling an evolving and increasingly advanced electric grid. The economics of storage have shifted to a point that the discussion no longer centers on the viability of energy storage; instead, it focuses on where and when these new technologies can most effectively be deployed to maximize system, customer, and societal benefits.

In light of the growing penetration of renewable energy and customer-owned generation in the U.P. coupled with ongoing desire to ensure reliability and affordability, it is important energy storage technologies be considered in the development of the U.P.'s electric supply future.

Recommendation 7: EGLE has provided grant funding to develop a Storage Roadmap for the State. EGLE should ensure that this study take into consideration the unique nature of the U.P. electric grid and identify specific opportunities for storage deployment in the region, such as incentives for residential energy storage.

Deploy Advanced Mobility and Electric Vehicle Infrastructure

Electric vehicles represent a small but growing percentage of vehicles on Michigan roads today. Current projections for electric vehicle adoption suggest that up to 12 percent of vehicles in the state will be electric by 2030 (MSU December 2018). At the same time, declining costs for batteries, improved travel ranges, and the proliferation of new vehicle models are making electric vehicles a viable option for many consumers and encouraging even greater adoption.

Electrifying the transportation sector will have major impacts on the energy sector as electricity begins to supplant traditional gasoline-powered vehicles. As electric vehicles become more commonplace, utilities may need to invest in new or different generation resources and make investments to ensure the power grid can support the growth. This shift will require electric utilities to incorporate electric vehicle deployment in their planning processes to account for potential increases in electric load and changes to consumption patterns from vehicle charging.

Done properly, the deployment of electric vehicle charging infrastructure will make worry-free travel throughout the state a reality, reduce harmful emissions from the transportation sector, and help Michigan continue to be a leader in mobility. EGLE has already developed a range of resources to support the necessary infrastructure buildout. The State's Optimized Electric Vehicle Charger Placement Plan provides analysis for deploying charging infrastructure throughout the state, including plans for creating connected infrastructure across the State's highway system and planning considerations for urban areas. EGLE has also created grant

funding opportunities to support the deployment of charging infrastructure through the Charge Up Michigan Program. Additional grant funding has been provided to support the purchase of electric school buses and the Department expects to announce new funding to support the electrification of vehicle fleets soon. In the last round of grant funding for charging infrastructure, EGLE awarded $1.6 million to 24 grantees—one of which was awarded to a U.P. community.

To accommodate increasing rates of electric vehicle ownership, the State will need to expand the number of charging stations available for across the U.P. Currently the U.P. has just 14 public electric vehicle charging stations and 24 charging outlets, only one of which supports DC fast charging. Electric vehicle charging stations in the U.P. account for just 2 percent of the state's charging stations. Lack of electric vehicle charging infrastructure has the potential to discourage electric vehicle adoption by U.P. residents and limit the ability for nonresidents to travel to the region.

Electric Vehicle Charging Stations in the UP, by County

County	Number of Charging Stations	Number of Level-1 Outlets	Number of Level-2 Outlets	Number of DC Fast Charging Outlets
Baraga	1	0	2	0
Chippewa	2	1	4	0
Delta	1	0	3	0
Dickinson	1	0	0	1
Gogebic	1	0	1	0
Houghton	1	0	1	0
Iron	1	0	1	0
Mackinac	4	0	7	0
Marquette	2	0	3	0
Upper Peninsula	14	1	22	1
Statewide	683	41	1093	317

(Source: U.S. DOE n.d.)

Recommendation 8: EGLE and the Office of Future Mobility and Electrification should continue to build on Michigan's goal of having worry-free electric vehicle travel by 2030. In addition, EGLE should provide dedicated grant funding to expand fast-charging infrastructure across the U.P. in accordance with the State's optimized placement plan.

Promote Energy and Environmental Justice

Energy and environmental justice are increasingly important concepts in energy planning and policy. These concepts have been defined by the Initiative for Energy Justice and the Environmental Protection Agency, respectively:

Energy justice Energy justice is about ethical concerns arising in connection with development, production, transportation, processing, and use of energy. It can be understood via the prohibitive and affirmative principles that state:

Prohibitive: Energy systems must be designed and constructed in such a way that they do not unduly interfere with individual and collective capabilities necessary for human flourishing.

Affirmative: if an individual or collective capability can only be secured by means of energy services, then there is also a derivative right to the energy service. (Sovacool et al. 2014).

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:

The same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work (U.S. EPA n.d.).

For customers in the U.P., energy justice in particular is constrained by the ability to actively participate in statewide collaborative activities, access to energy-related social services such as energy bill assistance and weatherization, and wide variation in rates across the many utilities serving the U.P. Energy justice can be used to remedy these and other inequities through incorporation of the aforementioned principles in energy planning and other decision-making activities.

Electricity Rate Equity

Although average residential electric prices in the U.P are just slightly higher than those in the Lower Peninsula, there's a great deal of inconsistency, with some customers paying just 30 percent less than the state average and some customers paying 70 percent higher rates than average. Overall, average annual residential costs are lower for all utilities in the U.P., driven in part by lower electric consumption by U.P households compared to the statewide average. Lower average household consumption could be a function of a high saturation of second homes—which account for 22 percent of housing units in the region (Winkler August 2019). Higher seasonal rates or customer charges may be a way to ensure that part-time residents pay their share of the cost to build and maintain the electric system.

Prices for commercial customers in the U.P. are 10 percent higher than the statewide average, but again, rates vary from 17 percent lower than average to more than twice the statewide average. For customers paying the highest costs, competitiveness, and ability for grow and expand can be negatively impacted in a region seeking to create good-paying jobs.

Overall, industrial customers pay 23 percent less for electricity in the U.P. compared to the statewide average. Of the three utilities with the lowest industrial prices, two have amongst the highest residential prices in the U.P. and in the state. The low average electric price for U.P. industrial customers is driven, in part, by the energy supply contracts in place for energy intensive industries, such as mining and paper mills. These customers consume a large amount of energy and base their electricity consumption decisions on real-time prices available in the market, allowing them to access the lowest-cost electricity for their operations, which contributes to lower average prices for industrial customers in the region.

Recommendation 9: The MPSC should examine the cost drivers and cost allocation for U.P. investor-owned utilities with the greatest disparity between rate classes. The Commission should also include any non-power supply cost recovery customers in a cost-of-service study to enable comparison of rates to what allocation would give. Though the Commission does not have jurisdiction over rates for electric cooperatives and municipal utilities, the outcomes of new cost-of-service studies could provide insights for these utilities and should be shared with other stakeholders.

Energy Assistance

Households with low incomes that need assistance to pay their energy bills and rely on deliverable fuels like propane are not eligible to receive assistance from the Low Income Home Energy Affordability Program (LIHEAP) or the Michigan Energy Assistance Program (MEAP) until their fuel tank is less than 25 percent full. This is due to the way Michigan administers its share of LIHEAP funds through the State Emergency Relief (SER) Program and the definition of crisis that is provided in MEAP's authorizing legislation Public Act 615 of 2012. Additionally, MEAP is required by statute to disperse 70 percent of funds during "crisis" season, defined as November 1 to May 31. The heating season runs from November 1 to March 31. (MPSC n.d.a).

Unfortunately, these practices mean that customers have to wait until their fuel supply runs low to seek assistance and may further have to wait until funds are available at the start of the heating or crisis season. As propane prices vary throughout the year and are typically at their highest during the heating season when demand is at its peak, having to wait to fill a customer's tank until it falls below 25 percent capacity or administer funds during the heating season means that a disproportionate amount of the limited assistance dollars available are being spent on propane when it is most expensive. Many propane providers offer prefill services during the months prior to the heating season. Pre-filling tanks potentially reduces the societal cost of heating fuel, but also provides potential health and safety benefits by reducing their risk of running out of heating fuel during the coldest months of the year. Analysis of SER funding distribution for heating fuels demonstrates that nearly 70 percent of assistance funds for heating fuels are spent between November and April, which coincides with higher average propane prices. In addition, this analysis show that the proportion of LIHEAP heating fuel payments made on behalf of U.P. residents (4 percent) smaller than the U.P. proportion of statewide households using heating fuels (7.4 percent).

State Emergency Relief Energy, Heating Fuel Payments, Fiscal Year 2020

Statewide

Reporting Month	Number of Payments	Payment Amount
October '19	7,047	$2,379,454.49
November '19	7,760	$2,917,899.91
December '19	7,703	$2,860,990.48
January '20	9,461	$3,325,911.83
February '20	8,641	$3,067,239.54
March '20	7,607	$2,833,947.53
April '20	9,271	$3,144,119.82
May '20	6,660	$2,764,013.99
June '20	3,993	$1,633,417.80
July '20	3,649	$1,439,654.87
August '20	4,639	$1,645,043.67
September '20	7,111	$2,251,443.57
Monthly Avg.	**6,962**	**$2,521,928.13**
Grand Total	**83,542**	**$30,263,137.50**

Upper Peninsula

Reporting Month	Number of Payments	Payment Amount	Percent of Statewide
October '19	180	$92,900.47	3.9%
November '19	269	$152,757.24	5.2%
December '19	320	$187,198.78	6.5%
January '20	309	$164,205.48	4.9%
February '20	301	$146,000.53	4.8%
March '20	234	$105,097.13	3.7%
April '20	299	$123,792.68	3.9%
May '20	198	$89,819.58	3.2%
June '20	91	$40,095.83	2.5%
July '20	84	$33,775.46	2.3%
August '20	54	$22,492.77	1.4%
September '20	112	$48,920.04	2.2%
Monthly Avg.	**206**	**$100,588.01**	4.0%
Grand Total	**2,451**	**$1,207,055.99**	4.0%

(Source: MDHHS https://www.michigan.gov/documents/mdhhs/GA-038-Annual_SER_Energy_Detail_708491_7.pdf)

MEAP provided an additional $1.5 million in energy assistance to Michigan households in Fiscal Year 2020. U.P. residents received $252,000, or 16.3 percent, of MEAP funding provided for propane. This represents a substantially higher share of assistance than was provided through SER during the same period.

Michigan Energy Assistance Program, Propane Assistance, Fiscal Year 2020

	Number of Payments	Assistance Funding	Percentage of Statewide
Statewide	2,806	$1,544,504.67	100%
Lower Peninsula	2,273	$1,292,201.24	83.7%
Upper Peninsula	533	$252,303.43	16.3%

(Source: MPSC February 2021)

Recommendation 10: The MPSC and Michigan Department of Health and Human Services should convene a workgroup with state agencies and other key stakeholders to identify and implement necessary changes to the LIHEAP plan to allow energy assistance funding to be used for propane pre-buy. This process should include a review of MEAP and LIHEAP to ensure assistance programs are achieving their desired outcomes and that energy assistance dollars are distributed, to the extent practicable, in proportion with household energy use characteristics. This recommendation is complementary to Recommendation 10 from the task force's Phase I report.

Enhance Rate Design Options to Promote Affordability for Electric Consumers

High electricity rates for some U.P. residents and businesses present a challenge to affordability and energy security. Electricity currently accounts for just 10 percent of U.P. households' primary space heating. Traditional electric space heating technologies such as electric resistance heat or electric furnaces are less efficient than newer technologies like the electric heat pump. Coupled with the high cost of electricity, existing inefficient electric heating systems and older building stock can further challenge affordability. Some U.P. utilities offer an electric heating rate for customers that offers customers a lower rate for a portion of the electricity they consume to heat their homes. For example, UPPCO's residential heating service tariff provides a reduced rate for each kilowatt hour (kWh) after the first 500 kWh from October to May. Similar electric heating rates are not universally available to U.P. residents.

The U.P.'s higher than average electric rates could hinder adoption of electric heating technologies for customers looking to replace their old systems. Newer electric heating technologies can provide consumers many benefits, including increased efficiency, lower ownership costs, and improved flexibility over other technologies. Electric heat also could potentially to be used as a demand response resource, much in the way that home air conditioning cycling incentivizes participating customers to allow energy providers to shift energy consumption to support the electric grid when needed. Lastly, electric heating could support the attainment of broader environmental goals by reducing reliance on natural gas or

propane, but to be realized, these benefits will require a greater share of electricity from renewable sources.

Recommendation 11: EGLE should support research to determine the potential for electric heating conversion in the U.P., identify best practices for setting electric heating rates and opportunities for collaboration among utilities, contractors, and manufacturers. The Department should leverage ongoing stakeholder engagement efforts underway through the MI Power Grid process to encourage electric utilities to develop residential and commercial rate designs that will support electrification.

Time-based Pricing

Another opportunity to create more flexible and affordable rates for U.P. customers is to establish time-of-use rates that better reflect the actual costs of electricity. Most utility rates are a static per kWh charge that does not represent the true cost of generating electricity, which varies from month to month and even hour to hour. By establishing time-of-use rates, utilities can send price signals to their customers to conserve energy when costs are high and shift their activities like running a dishwasher or charging an electric vehicle to periods when prices are the lowest. This can yield cost savings for both customers and utilities.

Time-of-use rates can reduce the amount of peak energy a utility must purchase or generate, but utilities must deploy advanced metering infrastructure or smart meters to offer time-of-use rates. Unlike traditional analog utility meters which require utility companies to manually record usage, smart meters allow utilities to track consumption throughout the day. Only four U.P. utilities have transitioned to smart meters for their entire customer base—Marquette Board of Power and Light, Bayfield Electric Cooperative, the City of Crystal Falls, and UPPCO (U.S. EIA October 2020).[17] The vast majority of U.P. utilities have very limited smart meter deployment. Most U.P. utilities have invested in automated meter reading technology which allows utilities to read meters remotely, but does not provide the same functionality as smart meters and would not support time-of-use rates.

Utilities in Michigan are still working to fully tap into the potential benefits offered by smart meters and time-of-use rates. At minimum, smart meters can reduce the cost associated with meter reading or allow for faster detection of a power outage, but that alone may not justify the costs of the new meters. Accessing the greater benefits promised by smart meters requires the establishment and utilization of time-of-use rates to manage energy consumption, avoid expensive infrastructure investments, and better manage the electric grid.

Recommendation 12: The MPSC should encourage investor-owned utilities that have deployed smart meters to consider time-of-use rate options for customers. Through the MI Power Grid initiative, MPSC staff are set to convene a workgroup process for time-based pricing where stakeholders will be able to hear from experts and review the experience of utilities that have already begun to implement new time-based rates. As the electric demand profile for U.P. utilities may differ from the experience of utilities in the Lower Peninsula, this workgroup

[17] UPPCO anticipates that smart meter installations will be substantially complete by mid 2021 (UPPCO n.d.).

should consider implications for time-based pricing on utilities whose customer demand peaks during winter months. Outcomes from this initiative should be shared with electric cooperatives and municipal utilities to ensure potential benefits can be accessed by all Michigan residents.

EGLE should evaluate federal grant opportunities that could be used to incentivize the deployment of smart meters throughout the U.P.

Provide Support to Local Communities

Local U.P. communities are essential for achieving a cleaner, more affordable, and secure energy system. Community leaders play a key role in establishing zoning ordinances for renewable energy projects and can lead by example in promoting efficient and advanced energy technologies. Yet the 2019 Michigan Local Energy Survey (MILES) surveyed 1,300 local units of government and found that local leaders in the U.P. have given less consideration to energy planning or policy development and indicated that energy issues are less relevant to their jurisdiction than the local leaders statewide. The survey responses indicate that the problem is not necessarily a lack of interest in energy issues, but that communities often lack the expertise, staff capacity, or financial resources to address energy issues. Only a fraction of U.P. communities have dedicated staff or external consultants to help them focus on energy issues, and some U.P. communities even lack staff to support more general zoning functions.

Community leaders expressed that they would take advantage of support if there were option available to them. The survey found that leaders were most likely to utilize sample zoning ordinances or templates and participate in workshops or trainings.

EGLE currently offers a number of opportunities for communities through the Office of Climate and Energy, which includes the following:

- Catalyst Communities Program – Provides knowledge, tools, and resources to communities as they work toward decarbonization.
- Guide to Energy Efficiency Planning for Rural Communities – A guidebook to help communities pursuing energy efficiency investment.
- EGLE Case Study Resources – Provides lessons learned from wind and solar development across the state to support communities in developing their own projects.
- Community Energy Management Programming – Provides a series of webinars for local governments aimed at supporting energy efficiency and renewable energy adoption. Current webinar offerings include:
    - Energy Efficiency Programs for Communities
    - The Michigan Energy Code Adoption Process
    - Energy Benchmarking for Municipal Facilities

- Facilitating Community-wide Clean Energy Improvements using PACE Financing
- Conducting Energy Audits on Municipal Facilities
- Using EXMT Online Mapping to Plan for Clean Energy

While the State offers robust programming options and even grant funding opportunities, more can be done to support U.P. communities with energy issues. U.P. leaders are motivated to support environmental sustainability in their communities and there is greater potential for intergovernmental collaboration in relation to recycling programs, green purchasing programs, and to a lesser extent, shared staffing for energy issues.

Recommendation 13: EGLE should expand resources available to communities to support energy planning activities, such as building energy management, renewable energy development, and other energy activities. This support should be centered around providing technical assistance to communities in the form of grant dollars, training, and staffing support for engaging with community members as well as planning and zoning support. The department should partner with other statewide organizations that have the capacity and networks to deliver training to local governments on energy planning and regulation, including the Michigan Association of Planning, MSU Extension, the Michigan Townships Association, and the Michigan Municipal League.

Lean into Economic Development Opportunities

The U.P.'s population has declined and aged over the last century. While populations have declined overall, urban areas are experiencing some population concentration increases (Winkler August 2019). The U.P.'s demographic changes are further challenged by the economic outlook for the U.P. The region has consistently contended with unemployment and poverty rates higher than the statewide average. In terms of economic opportunity in the U.P., the overall trend in private-sector employment has also been negative in recent years. From 2013–2019, employment in the U.P declined by 0.4 percent compared to a 9.9 percent increase statewide. Job opportunities in the U.P. are projected to continue to decline through 2026 (DTMB May 2020).

Despite the demographic and economic challenges for the U.P., there are still significant opportunities for the region to leverage the energy transition to spur economic growth. One such opportunity involves repurposing brownfields, postindustrial sites, and marginal lands for siting energy infrastructure. Many brownfields or postindustrial sites have limited redevelopment uses available to them due to site contamination, so these sites will require ongoing remediation efforts before they can be used more widely. Michigan's brownfield redevelopment program prioritizes redevelopment of these sites to capitalize on existing infrastructure, reduce sprawl, and create opportunities for economic growth. The U.P. has over 1,400 facilities listed in the Remediation Information Data Exchange. These facilities could potentially provide opportunities for siting energy infrastructure (EGLE n.d.)

Marginal lands owned by the State could also present an opportunity for energy infrastructure development. The State manages approximately 4.6 million acres of public land including state parks, game and wildlife areas, tourist attractions, harbors and boat launches, and state forests. Some of this land may have limited uses for recreation or other economic activities and could provide useful siting locations for renewable energy projects.

Recommendation 14: The Department of Natural Resources, EGLE, and the Michigan Economic Development Corporation (MEDC) should develop a comprehensive inventory of brownfields, postindustrial sites, and marginal state lands for energy infrastructure development. The Departments should engage the MDARD to identify other potential siting options for energy development, including renewables, combined heat and power, and other advanced energy technologies. The Departments should engage utility companies and other stakeholders to support mapping energy infrastructure assets to support potential site selection. The Departments should also evaluate incentives for energy infrastructure deployment at selected sites that are determined to benefit the public interest. The Departments should develop case studies for the Groveland Mine solar project to highlight the potential benefits provided by such projects.

For the U.P. to fully leverage its economic potential and embrace the ongoing energy transition, businesses and residents must have access to affordable high-speed internet. Access to reliable broadband services remains a barrier for many Michigan communities, but the U.P. has lower service availability at every speed. The gap is especially pronounced when considering the Federal Communications Commission's definition for the minimum broadband speed—25 megabits per second (Mpbs) download and 3 Mpbs upload. The availability of basic broadband service in the U.P. is 13 percent lower than the state as a whole.

Broadband Availability Estimates by Speed Tier, September 2020

Number of Households

	Number of Households
Statewide	3,872,508
Upper Peninsula	129,346
Lower Peninsula	3,743,162

Percent of Households Served

	10 x 1 Mbps	25 x 3 Mbps	100 x 10 Mbps	1 Gbps
Statewide	96.4%	81.8%	73.9%	12.1%
Upper Peninsula	93.6%	68.8%	63.7%	3.2%
Lower Peninsula	97.0%	84.6%	76.2%	14.1%

(Source: https://connectednation.org/michigan/wp-content/uploads/sites/13/2020/10/MI_Broadband_Availability_SpeedTier_Counties_2020_09_30_v2.pdf)

Without access to broadband, the U.P. may not be able to attract the businesses or residents who might otherwise consider locating in the region. There is a national emphasis on bringing 21st-century communications technology to all corners of the U.S., and funding provided through the Federal Communications Commission, U.S. Department of Agriculture and Rural Development, and Michigan Department of Technology, Management, and Budget are making this reality possible.

Even electric utilities have begun to play a role in expanding broadband access through these funding sources. Increasingly policymakers and electric utilities are even finding new opportunities to expand broadband service to underserved communities. Electric cooperatives and municipalities are taking advantage of targeted funding for rural communities to build out high-speed internet. There are also examples from other states where investor-owned utilities have supported broadband deployment by expanding middle-mile fiber, installing conduits as part of other infrastructure buildouts, or through improved pole attachment processes.

Recommendation 15: The MEDC through the Connecting Michigan Task Force should conduct a listening tour for U.P. residents and businesses in order to identify barriers to broadband adoption in the U.P. The Connecting Michigan Task Force should also engage investor-owned utilities, electric cooperatives, and municipal utilities to identify ways that these entities can support the deployment of broadband service to unserved and underserved populations. In collaboration with the MPSC, the MEDC should disseminate information about grant funding opportunities and other funding sources that can support the expansion of broadband services and adoption throughout the U.P.

Given the U.P.'s declining population and slower long-term projected job growth, clean energy jobs present a great opportunity to provide new employment opportunities throughout the region. Clean energy jobs can represent a variety of sectors including energy efficiency, renewable energy, transportation, electric grid and storage, and clean fuels. Despite representing 3 percent of Michigan's total population, the U.P. accounts for less than 2 percent of clean energy jobs (Clean Jobs Midwest n.d.).

Creating opportunities for more clean energy jobs in the U.P. requires a consistent policy environment, stable market opportunities, and the cultivation of a skilled workforce. As discussed above, the continuity of EWR programming for many U.P. customers is uncertain given the looming expiration of the mandate for electric cooperatives and municipal utilities. Additionally, the current limitations on customer-owned generation, such as rooftop solar, create uncertainty for solar development in the U.P. Though recommendations related to these topics are addressed elsewhere in this report, it is important to emphasize that decreasing customers' ability to pursue energy efficiency and renewables will almost certainly have a negative impact on employment opportunities in the clean energy sector.

The third aspect of cultivating clean energy jobs is to ensure that there is a stable pipeline of career and technical education opportunities for U.P. residents. Programs like those offered by the Michigan Department of Education Office of Career and Technical Education (for secondary education) and the Department of Labor and Economic Opportunity (LEO) Workforce Development (for postsecondary education) are important aspects of ensuring access to training and the continued development of a skilled workforce in the state.

Recommendation 16: EGLE, with LEO, should continue to provide support for career and technical education programs through efforts like Michigan Reconnect to ensure that Michigan residents can access necessary training to participate in the clean energy economy. The Departments should also work with key partner organizations to identify workforce gaps and potential areas for growth in an effort to promote programing matches training with in-demand energy careers. The Departments should disseminate information about training programs, job opportunities, and other resources to support the development of a clean energy talent pipeline. EGLE should also consider developing a business inclusion and diversity policy for all clean energy grant projects that incentivizes local hiring and recruitment practices.

Appendix I

Executive Order 2019-14

STATE OF MICHIGAN
OFFICE OF THE GOVERNOR
LANSING

GRETCHEN WHITMER
GOVERNOR

GARLIN GILCHRIST II
LT. GOVERNOR

EXECUTIVE ORDER

No. 2019-14

UP Energy Task Force

Department of Environment, Great Lakes, and Energy

The residents of Michigan's Upper Peninsula ("UP") deserve an energy supply that is affordable, secure, and environmentally sound. Today, however, they face significant challenges in these respects. For several reasons, including the region's expansive geographic reach and low population density, the UP has struggled with energy affordability and infrastructure development, and parts of the UP have some of the highest electricity rates in the nation. These prices, coupled with relatively high poverty rates in certain areas, have resulted in UP residents paying a disproportionate amount of their monthly income on energy costs.

Moreover, about 25% of UP residents use propane to heat their homes. Most of these residents rely on propane delivered through a single pipeline: Line 5, miles of which run through the waters of the Great Lakes, posing an ever-present threat to those waters and all who depend on them. Just this week a report by the National Transportation Safety Board about last year's anchor strike on Line 5 demonstrated that Michigan is one mistake away from a catastrophic oil spill in the Great Lakes. While no established alternative system for distributing propane exists now, with focused effort a system can be put in place.

The strength of Michigan's economy, and the health of its Great Lakes and residents, would benefit from a close examination of how the UP's energy needs can be best met, with a focus on affordability, reliability, security, and environmental soundness.

Section 1 of article 5 of the Michigan Constitution of 1963 vests the executive power of the State of Michigan in the governor.

Section 8 of article 5 of the Michigan Constitution of 1963 obligates the governor to take care that the laws be faithfully executed.

Acting pursuant to the Michigan Constitution of 1963 and Michigan law, I order the following:

1. Creation of the UP Energy Task Force

(a). The UP Energy Task Force ("Task Force") is created as an advisory body within the Department of Environment, Great Lakes, and Energy ("Department").

(b). The Task Force shall consist of at least 13 voting members appointed by the governor, representing the range of expertise relevant to this issue, and all of whom shall be residents of this state.

(c). A vacancy on the Task Force shall be filled in the same manner as the original appointment.

2. Charge to the Task Force

(a). The Task Force shall act in an advisory capacity to the governor and shall do the following:

(1) Assess the UP's overall energy needs and how they are currently being met.

(2) Formulate alternative solutions for meeting the UP's energy needs, with a focus on security, reliability, affordability, and environmental soundness. This shall include, but is not limited to, alternative means to supply the energy sources currently used by UP residents, and alternatives to those energy sources.

(3) Identify and evaluate potential changes that could occur to energy supply and distribution in the UP; the economic, environmental, and other impacts of such changes; and the alternatives for meeting the UP's energy needs in response to such changes.

(4) Provide other information or advice or take other actions as directed by the governor.

(b). The Task Force shall prepare a final report and submit it to the governor. The Task Force shall complete its final report in two stages. First, the Task Force shall submit a propane plan to the governor by March 31, 2020. This plan shall focus on alternative means to supply propane to the UP, consistent with section 2(a) of this order. Second, the Task Force shall submit the remainder of its report, also consistent with section 2(a), by March 31, 2021.

3. Operations of the Task Force

(a). The Department shall assist the Task Force in the performance of its duties and provide personnel to staff the Task Force. The Michigan Public Service Commission, and other departments or agencies with relevant expertise, may also assist the Task Force and provide personnel to staff the Task Force, in coordination with the director of the Department. The budgeting, procurement, and related management functions of the Task Force shall be performed under the direction and supervision of the director of the Department.

(b). The Task Force shall adopt procedures, consistent with this order and applicable law, governing its organization and operations.

(c). The Task Force shall comply with the Freedom of Information Act, 1976 PA 442, as amended, MCL 15.231 to 15.246.

(d). The Task Force shall comply with the Open Meetings Act, 1976 PA 267, as amended, MCL 15.261 to 15.275.

(e). The governor shall designate the chairperson of the Task Force.

(f). The Task Force may select from among its members a vice chairperson.

(g). The Task Force may select from among its members a secretary. Task Force staff shall assist the secretary with recordkeeping responsibilities.

(h). The Task Force shall meet at the call of its chairperson and as otherwise provided in the procedures adopted by the Task Force.

(i). A majority of the members of the Task Force serving constitutes a quorum for the transaction of the business of the Task Force. The Task Force must act by a majority vote of its serving members.

(j). The Task Force may establish advisory workgroups composed of individuals or entities participating in Task Force activities or other members of the public as deemed necessary by the Task Force to assist it in performing its duties and responsibilities. The Task Force may adopt, reject, or modify any recommendations proposed by an advisory workgroup.

(k). The Task Force may, as appropriate, make inquiries, studies, and investigations, hold hearings, and receive comments from the public. The Task Force also may consult with outside experts in order to perform its duties, including experts in the private sector, organized labor, government agencies, and at institutions of higher education.

(l). The Task Force may hire or retain contractors, sub-contractors, advisors, consultants, and agents, and may make and enter into contracts necessary or incidental to the exercise of the powers of the Task Force and the performance of its duties as the Director deems advisable and necessary, consistent with this order and applicable law, rules and procedures, subject to available funding.

(m). The Task Force may accept donations of labor, services, or other things of value from any public or private agency or person. Any donations shall be received and used in accordance with law.

(n). Members of the Task Force shall serve without compensation, but may receive reimbursement for necessary travel and expenses consistent with applicable law, rules, and procedures, and subject to available funding.

(o). Members of the Task Force shall refer all legal, legislative, and media contacts to the Department.

(p). Ninety days after issuance of its final report, the Task Force shall dissolve.

4. Implementation

(a). All departments, committees, commissioners, or officers of this state shall give to the Task Force, or to its chairperson, any necessary assistance required by the Task Force, or its chairperson, in the performance of the duties of the Task Force so far as is compatible with their duties and consistent with this order and applicable law. Free access also must be given to any books, records, or documents in their custody relating to matters within the scope of inquiry, study, or review of the Task Force, consistent with applicable law.

(b). This order is not intended to abate a proceeding commenced by, against, or before an officer or entity affected by this order. A proceeding may be maintained by, against, or before the successor of any officer or entity affected by this order.

(c). If any portion of this order is found to be unenforceable, the unenforceable provision should be disregarded and the rest of the order should remain in effect as issued.

(d). This order is effective upon filing.

Given under my hand and the great seal of the State of Michigan.

Date: June 7, 2019

GRETCHEN WHITMER
GOVERNOR

By the Governor:

SECRETARY OF STATE

FILED WITH SECRETARY OF STATE
ON 6/7/19 AT 11:04 A.M.

Appendix II

List of Presentations and Listening Sessions

UP ENERGY TASK FORCE MEETING PRESENTATIONS AND LISTENING SESSIONS

Date	Location	Topics	Presentation Summary
May 12, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Introduction to electricity	**Cathy Cole, Michigan Public Service Commission** Information on electricity basics and on energy providers, territory, and rate comparisons.
June 9, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams	Electric Transmission Systems Overview of MISO	**Ken Copp, American Transmission Company** An overview on ATC's Upper Peninsula Transmission System. **Cathy Cole, Michigan Public Service Commission** Introductory information on the Midcontinent Independent System Operator, Inc. (MISO).
July 15, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Local utilities services	**Mike Furmanski, Electric Superintendent for the City of Escanaba** Overview on electric utility service in the U.P. **Tom Carpenter, Executive Director of the Marquette Board of Light & Power** Presentation on Marquette utilities service. **Brett French, VP Business Development and Communications at UPPCO** Presentation on UPPCO utilities service.

Date	Location	Topics	Presentation Summary
Sept. 14, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Electric Utilities Role in Serving U.P. residents and businesses Overview of UP Energy	**Aaron Wallin, Chief Financial Officer/Director of Power Marketing and Regulatory Affairs** Overview of Cloverland Electric Cooperation utilities service **Douglas Jester, Partner, 5 Lakes Energy and UP Energy Task Force Member** Overview of U.P. Energy with Suggestions on Task Force Priorities
Oct. 7, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Overview of the Energy Survey and renewable energy options in the U.P.	**Sarah Banas Mills, PhD Senior Project Manager, Graham Sustainability Institute and Lecturer, Ford School of Public Policy University of Michigan** Overview of the Energy Survey and renewable energy options in the U.P.
Nov. 6, 2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Integrated Resource Planning and Financing	**Dan Scripps, Chair, Michigan Public Service Commission** An overview of integrated resource planning (IRP) and a presentation on financing including information on Michigan Saves, Green Bank, siting, etc.

Date	Location	Topics	Presentation Summary
Dec. 15.2020	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Task Force work session to discuss, consider, and determine potential recommendations for inclusion in report.	Public Sector Consultants facilitated task force work session. No presentations.
Jan. 11, 2021	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Discussion and prioritization of recommendations to be included in report.	Public Sector Consultants facilitated task force work session. No presentations.
March 3, 2021	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Task Force discussion and comments on draft report and recommendations.	Public Sector Consultants facilitated task force work session. No presentations.
March 16, 2021	Remote attendance by UP Energy Task Force members and public through Microsoft Teams meeting	Task Force provided input on public comments submitted on recommendations.	Public Sector Consultants facilitated task force work session. No presentations.

Note: Public comment/listening sessions were held at all regular and special meetings of the UP Energy Task Force.

Appendix III

U.P. Energy Task Force Recommendations: Part 2 – Energy Supply

Energy Supply Recommendations Organized by Agency/Government Entity

Recommendations the Office of the Governor is asked to consider

Recommendation 1: The administration should encourage all U.P. electric providers to participate in a region-wide electric plan covering the full U.P. This planning effort should encompass all aspects of the U.P.'s electric supply, including forecasting electricity demand, evaluating generation needs, assessing grid reliability, mapping utility service territories, and identifying opportunities and incentives for collaboration amongst providers.

Recommendations the Michigan Legislature is asked to consider

Recommendation 3: The Michigan Legislature should remove the sunset on requiring electric cooperatives and municipal utilities to offer cost-effective EWR programs and to achieve annual savings at specified target levels. This legislative change should enhance flexibility for electric cooperatives and municipal utilities to reduce administrative costs and reporting requirements in order to provide greater direct savings to customers. The Legislature should also authorize a matching grant program to support EWR programs offered by electric cooperative and municipal utilities.

Recommendations requiring interdepartmental collaboration. State agencies are asked to consider

Recommendation 5: EGLE and MPSC should work with the MDARD once the Propane Commission is operational to demonstrate the value of EWR programs, provide technical support, and encourage the Propane Commission to consider ways to maximize the program's funding and impact. The Propane Commission should also consider opportunities to integrate implementation of efficiency initiatives targeted to propane users with other program providers that serve electric and natural gas utilities as well as providers who conduct low-income home weatherization work to ensure comprehensive services that deliver meaningful savings.

Recommendation 8: EGLE and the Office of Future Mobility and Electrification should continue to build on Michigan's goal of having worry-free electric vehicle travel by 2030. In addition, EGLE should provide dedicated grant funding to expand fast-charging infrastructure across the U.P. in accordance with the State's optimized placement plan.

Recommendation 10: The MPSC and Michigan Department of Health and Human Services should convene a workgroup with state agencies and other key stakeholders to identify and implement necessary changes to the LIHEAP plan to allow energy assistance funding to be used for propane pre-buy. This process should include a review of MEAP and LIHEAP to ensure assistance programs are achieving their desired outcomes and that energy assistance dollars are distributed, to the extent practicable, in proportion with household energy use characteristics. This recommendation is complementary to Recommendation 10 from the task force's Phase I report.

Recommendation 14: The Department of Natural Resources, EGLE, and the Michigan Economic Development Corporation (MEDC) should develop a comprehensive inventory of brownfields, postindustrial sites, and marginal state lands for energy infrastructure development.

The Departments should engage the MDARD to identify other potential siting options for energy development, including renewables, combined heat and power, and other advanced energy technologies. The Departments should engage utility companies and other stakeholders to support mapping energy infrastructure assets to support potential site selection. The Departments should also evaluate incentives for energy infrastructure deployment at selected sites that are determined to benefit the public interest. The Departments should develop case studies for the Groveland Mine solar project to highlight the potential benefits provided by such projects.

Recommendation 15: In collaboration with the MPSC, the MEDC should disseminate information about grant funding opportunities and other funding sources that can support the expansion of broadband services and adoption throughout the U.P.

Recommendation 16: EGLE, with LEO, should continue to provide support for career and technical education programs through efforts like Michigan Reconnect to ensure that Michigan residents can access necessary training to participate in the clean energy economy. The Departments should also work with key partner organizations to identify workforce gaps and potential areas for growth in an effort to promote programing matches training with in-demand energy careers. The Departments should disseminate information about training programs, job opportunities, and other resources to support the development of a clean energy talent pipeline. EGLE should also consider developing a business inclusion and diversity policy for all clean energy grant projects that incentivizes local hiring and recruitment practices.

Recommendations the Department of Environment, Great Lakes, and Energy is asked to consider

Recommendation 4: EGLE should define opportunities to provide grant funding or other resources—such as revolving loan funding dedicated to the U.P.—to expand access to energy investments and to enable customers to obtain financing for substantial and cost-effective upgrades. Additionally, federal resources can be a major source of low-cost financing or grant dollars. State or federal resources could also be used to expand the Michigan Saves trade ally network in the U.P. to support the development of qualifying projects and to support the economic development recommendation related to expansion of clean energy jobs. Finally, State or federal resources could be used to help utilities make necessary billing system modifications to allow for on-bill financing/servicing.

Recommendation 6: EGLE should provide grant funding and technical assistance to regional planning organizations and local communities in the U.P. to support planning and zoning to streamline renewable energy and electric vehicle infrastructure development. This effort should build off the existing Clean Energy and Energy Management Webinar and the Zoning for Renewable Energy Database. EGLE should also provide assistance for communities seeking to support utility scale and customer-owned renewable energy deployment through the development and adoption of zoning ordinances.

Recommendation 7: EGLE has provided grant funding to develop a Storage Roadmap for the State. EGLE should ensure that this study take into consideration the unique nature of the U.P. electric grid and identify specific opportunities for storage deployment in the region, such as incentives for residential energy storage.

Recommendation 11: EGLE should support research to determine the potential for electric heating conversion in the U.P., identify best practices for setting electric heating rates and opportunities for collaboration among utilities, contractors, and manufacturers. The Department should leverage ongoing stakeholder engagement efforts underway through the MI Power Grid process to encourage electric utilities to develop residential and commercial rate designs that will support electrification.

Recommendation 12: EGLE should evaluate federal grant opportunities that could be used to incentivize the deployment of smart meters throughout the U.P.

Recommendation 13: EGLE should expand resources available to communities to support energy planning activities, such as building energy management, renewable energy development, and other energy activities. This support should be centered around providing technical assistance to communities in the form of grant dollars, training, and staffing support for engaging with community members as well as planning and zoning support. The department should partner with other statewide organizations that have the capacity and networks to deliver training to local governments on energy planning and regulation, including the Michigan Association of Planning, MSU Extension, the Michigan Townships Association, and the Michigan Municipal League.

Recommendations the Michigan Public Service Commission is being asked to consider

Recommendation 2: The MPSC should encourage U.P. investor-owned utilities to develop distribution plans, similar to those developed by other investor-owned utilities in the state, in order to provide greater transparency for individual investments. These planning efforts will support grid modernization investment, improve reliability, and enable the deployment of advanced energy solutions. The Commission has limited authority over municipal and electric cooperatives—which serve nearly half of all U.P. customers—and so should work to engage these utilities in stakeholder processes on a voluntary basis.

Recommendation 3: The MPSC should carefully review EWR plans and integrated resource plans (IRP) of investor-owned utilities in the U.P., to ensure that utilities are seeking to capture all cost-effective and achievable energy-efficiency potential.

Recommendation 4 The MPSC should convene investor-owned utilities to further explore opportunities to utilize the ability under Public Act 342 of 2016 for these utilities to offer on-bill financing for their customers.

Recommendation 9: The MPSC should examine the cost drivers and cost allocation for U.P. investor-owned utilities with the greatest disparity between rate classes. The Commission should also include any non-power supply cost recovery customers in a cost-of-service study to enable comparison of rates to what allocation would give. Though the Commission does not have

jurisdiction over rates for electric cooperatives and municipal utilities, the outcomes of new cost-of-service studies could provide insights for these utilities and should be shared with other stakeholders.

Recommendation 12: The MPSC should encourage investor-owned utilities that have deployed smart meters to consider time-of-use rate options for customers. Through the MI Power Grid initiative, MPSC staff are set to convene a workgroup process for time-based pricing where stakeholders will be able to hear from experts and review the experience of utilities that have already begun to implement new time-based rates. As the electric demand profile for U.P. utilities may differ from the experience of utilities in the Lower Peninsula, this workgroup should consider implications for time-based pricing on utilities whose customer demand peaks during winter months. Outcomes from this initiative should be shared with electric cooperatives and municipal utilities to ensure potential benefits can be accessed by all Michigan residents.

Recommendations the Michigan Economic Development Corporation is asked to consider

Recommendation 15: The MEDC through the Connecting Michigan Task Force should conduct a listening tour for U.P. residents and businesses in order to identify barriers to broadband adoption in the U.P. The Connecting Michigan Task Force should also engage investor-owned utilities, electric cooperatives, and municipal utilities to identify ways that these entities can support the deployment of broadband service to unserved and underserved populations. In collaboration with the MPSC, the MEDC should disseminate information about grant funding opportunities and other funding sources that can support the expansion of broadband services and adoption throughout the U.P.

Appendix IV

U.P. Energy Task Force Recommendations: Part 1 – Propane Supply

Propane Supply Recommendations Organized by Agency/Government Entity

Recommendations the Michigan Legislature is asked to consider

Recommendation 1: The Legislature should explore creation of a customer storage incentive program designed to encourage propane retailers and their customers to work together to maximize the amount of propane in customer storage at the beginning of and throughout the heating season.

Recommendation 2: The Legislature should explore a wholesalers and retailers storage incentive program to encourage wholesalers and retailers to create more propane storage capacity. In order to avoid creating a disadvantage for companies that made early investments in this area, the incentive could be designed to focus on the relationship between a company's annual sales and its storage capacity.

Recommendation 4: The Legislature should review the Freight Economic Development Program to determine if any program revisions are needed to encourage greater capacity for receiving propane delivery by rail and diversifying our supply infrastructure to protect Michigan consumers. Because of the lead time necessary to expand rail infrastructure, action on this recommendation should be taken as soon as is practicable.

Recommendation 9: The Legislature should increase LIHEAP funding for weatherization to help reduce long-term resource burdens imposed upon low-income customers to pay utility bills.

Recommendation 10: The Legislature should engage the Michigan Propane Gas Association about the potential of levying a small surcharge on propane fuel to target an Energy Waste Reduction/weatherization program focused on propane users in Michigan. This program could be operated in a manner similar to the State's Energy Waste Reduction program administrator for those utilities that choose to not run their own programs.

Recommendation 11: The Legislature should establish a fund designated to pay for the weatherization program deferral home repair and mitigation measures needed to make a residence eligible for federal, state, and utility-sponsored weatherization assistance when utility-sponsored weatherization assistance includes the major measures of air sealing and/or insulation.

Recommendation 14: The Legislature should explore adopting fuel price gouging legislation, using the Wisconsin law as a potential model. The legislation should apply to both wholesalers and retailers of propane and ensure that the prices charged to customers reflect the actual costs incurred by propane providers plus a reasonable and customary profit.

Recommendations the Department of Technology, Management and Budget is being asked to consider

Recommendation 3: The Department of Technology, Management and Budget should explore whether the state could contract for propane in a manner that would create the equivalent of a strategic propane reserve that would be available in a timely manner in case of a disruption.

Recommendation 8: The Department of Technology, Management and Budget (DTMB) should work with the DHHS to determine, in its implementation of assistance programs, if the state could contract for propane in such a way as to have a resident's tank filled on a state account and therefore potentially at a lower cost. In implementing this recommendation, the state should recognize and work within existing contractual arrangements of the customer.

Recommendation 13: Consistent with other recommendations, DTMB should explore whether it can revise the method by which it contracts for propane, to potentially go beyond just serving to supply state facilities, and provide other benefits associated with added storage capacity or serving low- income residents eligible for bill payment assistance as discussed in other portions of this report.

Recommendations the Department of Transportation is being asked to consider

Recommendation 5: MDOT should pursue a State Planning & Research (SPR) project that would include a survey of U.P. railroad companies to better understand their capabilities with regard to propane delivery and storage. The SPR project should also include ratings/classifications of railroad lines and spurs and needed upgrades to facilitate improved propane distribution in the Upper Peninsula. MDOT, in collaboration with the Railroad Companies, should provide a summary of the survey results and recommendations regarding needed rail line upgrades to the Michigan Legislature.

Recommendations the MPSC is being asked to consider

Recommendation 6: The MPSC should identify and monitor factors that can cause or contribute to a propane shortage or disruption that could potentially affect Michigan customers. In addition, we recommend the MPSC develop specific steps that would be taken by the state in response to warning signs they are monitoring. To the extent that identified significant factors are not required to be reported to a government agency, the MPSC should make recommendations to the Legislature or the appropriate agency of the nature of the information and the value of potentially requiring additional disclosure. In addition, if the MPSC has sufficient information but no authority to take necessary actions, it should make a recommendation to the Legislature regarding the need and value of additional authority. (See Appendix IV.)

Recommendation 12: The MPSC should require one standard application for use by all regulated utilities for customers seeking energy waste reduction, weatherization and/or bill payment assistance and to the extent possible require utilities that serve the same location to harmonize both their eligibility requirements and the deployment of their energy waste reduction programs.

Recommendations the Department of Health and Human Services is asked to consider

Recommendation 7: The Department of Health and Human Services (DHHS) should review assistance programs to determine if more families in need could be identified earlier under current self- sufficiency programs and their support crafted to allow them to participate in lower cost budget plans offered by propane retailers, thus reducing the numbers of families which then need to rely on the SER program for family in crisis.

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