

## INTEGRATED RESOURCE PLAN (IRP)

Western Area Power Administration's (WAPA) customers must comply with the requirements of the Energy Planning and Management Program (EPAMP (10 CFR Part 905)) to meet the objectives of Section 114 of the Energy Policy Act of 1992 (EPAAct). A WAPA customer is any entity that purchases firm capacity with or without energy, from WAPA under a long-term firm power contract. Integrated resource planning allows customers to meet the objectives of Section 114 of EPAAct.

Integrated resource planning is a planning process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, renewable energy resources, district heating and cooling applications, and cogeneration, to provide reliable service to electric consumers. An IRP supports utility-developed goals and schedules. An IRP must treat demand and supply resources on a consistent and integrated basis. The plan must take into account necessary features for system operation, such as diversity, reliability, dispatchability, and other risk factors. The plan must take into account the ability to verify energy savings achieved through energy efficiency and the projected durability of such savings measured over time. (See 10 CFR § 905.11 (a)).

### **Who May Use This Form:**

Utilities that primarily provide retail electric service that have limited staff, limited resource options, and obtain a significant portion of its energy needs through purchase power contracts are eligible to use this form. Utilities using this form may generate a limited amount of energy if the generating resources are primarily used as back up resources, to support maintenance and outages, or during periods of peak demand.

### **Completing This Form:**

To meet the Integrated Resource Planning reporting requirement, complete this form in electronic format in its entirety. Unaddressed items will be deemed incomplete and the IRP may not be eligible for approval. All of the data fields in this form automatically expand. Additional information may be attached to and submitted with this report. WAPA reserves the right to require supporting back-up materials or data used to develop this report. If there is any conflict between this form and the requirements defined in EPAMP, the requirements in EPAMP shall prevail.

## EPAMP Overview

The Energy Planning and Management Program (EPAMP) is defined in the Code of Federal Regulations in Title 10, Part 905 (10 CFR 905). The purposes of EPAMP are to meet the objectives of the Energy Policy Act of 1992 (EPAAct) while supporting integrated resource planning; demand-side management, including energy efficiency, conservation, and load management; and the use of renewable energy.

EPAMP was initially published in the Federal Register at 60 FR 54714 on October 20, 1995, and revised in 65 FR 16795 on March 30, 2000, and 73 FR 35062 on June 20, 2008. 10 CFR § 905.11 defines what must be included in an IRP.

WAPA's Energy Services Web site

(<https://www.wapa.gov/EnergyServices/Pages/energy-services.aspx>) provides extensive information on integrated resource planning and reporting requirements. If you have questions or require assistance in preparing your IPR, contact your WAPA regional Energy Services representative.

## IRP Content

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# INTEGRATED RESOURCE PLAN (IRP) 5-Year Plan

<b>Customer Name:</b>
<b>Midwest Energy, Inc.</b>

<b>IRP History:</b> Check one as applicable.	
	<b>This is the submitter's first IRP submittal.</b>
<b>X</b>	<b>This submittal is an update/revision to a previously submitted IRP.</b>

<b>Reporting Dates:</b>	
<b>IRP Due Date:</b>	July 2020
<b>Annual Progress Report Due Date:</b>	July 2020

<b>Customer Contact Information:</b> Provide contact information for your organization. The contact person should be able to answer questions concerning the IRP.	
<b>Customer Name:</b>	Midwest Energy Inc.
<b>Address:</b>	1330 Canterbury
<b>City, State, Zip:</b>	Hays KS 67601
<b>Contact Person:</b>	Aaron Rome
<b>Title:</b>	Manager of Trans and Market Ops
<b>Phone Number:</b>	785-625-1431
<b>E-Mail Address:</b>	<a href="mailto:arome@mwenergy.com">arome@mwenergy.com</a>
<b>Website:</b>	<a href="http://www.mwenergy.com">www.mwenergy.com</a>

<b>Type of Customer:</b> Check one as applicable.	
	<b>Municipal Utility</b>
<b>X</b>	<b>Electric Cooperative</b>
	<b>Federal Entity</b>
	<b>State Entity</b>
	<b>Tribal</b>
	<b>Irrigation District</b>
	<b>Water District</b>
	<b>Other (Specify):</b>

**SECTION 1****UTILITY/CUSTOMER OVERVIEW****Customer Profile:**

Enter the following data for the most recently completed annual reporting period. Data may be available on form EIA-861, which you submit to the U.S. Energy Information Administration (EIA).

<b>Reporting Period</b>	
Reporting Period Start Date (mm/dd/yyyy)	1/1/2019
Reporting Period End Date (mm/dd/yyyy)	12/31/2019
<b>Energy Sales &amp; Usage</b>	
Energy sales to Ultimate End Customers (MWh)	1500283
Energy sales for Resale (MWh)	141441
Energy Furnished Without Charge (MWh)	0
Energy Consumed by Respondent Without Charge (MWh)	4052
Total Energy Losses (MWh entered as positive number)	203374
Total Energy Usage (sum of previous 5 lines in MWh)	1849150
<b>Peak Demand (Reporting Period)</b>	
Highest Hourly Summer (Jun. – Sept.) Peak Demand (MW)	376
Highest Hourly Winter (Dec. – Mar.) Peak Demand (MW)	244
Date of Highest Hourly Peak Demand (mm/dd/yyyy)	07/19/2019
Hour of Highest Hourly Peak Demand (hh AM/PM)	16:00 CPT
<b>Peak Demand (Historical)</b>	
All-Time Highest Hourly System Peak Demand (MW)	393
Date of All-Time Hourly System Peak Demand (mm/dd/yyyy)	6/28/2012
Hour of All-Time Hourly Peak System Demand (hh AM/PM)	16
<b>Number of Customers/Meters (Year End of Reporting Period)</b>	
Number of Residential Customers	29687
Number of Commercial Customers	13244
Number of Industrial Customers	7013
Other (Specify):	
Other (Specify):	
Other (Specify):	
Other (Specify):	
Other (Specify):	

**Customer Service Overview:**

Describe your customer service territory and the services provided. Include geographic area, customer mix, key customer and significant loads, peak demand drivers, competitive situation, and other significant or unique aspects of the customer and/or service territory. Provide a brief summary of the key trends & challenges impacting future resource needs including population changes, customer growth/losses, and industrial developments.

Midwest Energy Inc. ("Midwest") is a customer-owned cooperative corporation serving approximately 50,000 electric and 40,000 natural gas customers located in parts of 41 counties of central and northwest Kansas. Midwest Energy has a typical blend of commercial and residential load but there are a few unique features to the load base of Midwest Energy. Oil pumping, agriculture irrigation pumping, and lately commodity pumping stations located on large interstate pipelines have been additional load types that have aided in recent sales growth. Kansas does not have retail wheeling but rather service territories that remain non-competitive. Midwest Energy is a summer peaking utility on the retail side. The transmission system is also summer peaking and typically coincides with the retail peak as Midwest load is the largest load served by Midwest Transmission. Oil field depletion as well as the Ogallala aquifer depletion are long term concerns for the region as agriculture and oil are the primary economic drivers in the area.

### Electricity Utility Staff & Resources:

Summarize the number of full-time equivalent employees by primary functions such as power production, distribution, and administration. Describe any resource planning limitations, including economic, managerial, and/or resource capabilities.

Below are the departments that comprise Midwest Energy's workforce. Since Midwest is both a natural gas and electric distribution utility many of the positions below have duties that encompass both natural gas and electric responsibilities. Midwest Energy has still retained its G&T structure. While a relatively small G&T, Midwest has remained a fully vertically integrated electric coop. This too allows us to capture additional synergies utilizing employee skill sets for multiple sides of the business.

Human Resources - 8  
Customer Service- 26  
Information Technology - 13  
Finance- 16  
Engineering and Energy Supply - 41  
Executive - 7  
Operations – 158

### Historical Energy Use:

Enter the peak system demand and total annual energy use for the preceding ten (10) reporting years. For total energy, include retail sales, energy consumed or provided without charge, and system losses.

Reporting Year	Peak Demand (MW)	Total Energy (MWh)
2012	393	1851104
2013	373	1846603
2014	353	1845987
2015	353	1779784
2016	353	1785679
2017	369	1769120
2018	363	1826042
2019	376	1849150
2020	351	1715283
2021	386	1863000

## SECTION 2 | FUTURE ENERGY SERVICES PROJECTIONS

### Load Forecast:

Provide a load forecast summary for the next ten (10) years; **and** provide a narrative statement describing how the load forecast was developed. Discuss any expected future growth. If applicable, you may attach a load forecast study and briefly summarize the results in this section. (See 10 CFR § 905.11 (b) (5)).

Load Forecast:

Reporting Year	Peak Demand (MW)	Total Energy (MWh)
2022	390	1888500
2023	393	1907000
2024	396	1929000
2025	402	1951000
2026	406	1973000
2027	410	1993000
2028	414	2001000
2029	418	2003000
2030	420	2004000
2031	420	2004500

Narrative Statement:

A forecast update was made in 2020. Commodity pumping load accounts for most of the very modest system growth Midwest Energy has been experiencing. Load patterns have been very consistent the past decade as Midwest Energy has very little large non-conforming load. EV loading was taken into consideration in the latest load forecast but adaptation in the western part of the state at this time appears to be much slower than in the metro areas to the east. The exception to this may be the I-70 corridor and the need for charging stations along the interstate. With the data that has been compiled, very little growth has been projected from EV in this forecast through 2030. Midwest Energy will be conducting a deep dive into the potential impacts of EV on our load forecast in 2021. Time of use rates are currently being explored for residential and small commercial to curb customer behavior and reduce system peak and assign cost more equitably.

**SECTION 3****EXISTING SUPPLY-SIDE RESOURCES****Existing Supply-Side Resource Summary:**

Provide a general summary of your existing supply-side resources including conventional resources, renewable generation, and purchase power contracts (including Western Area Power Administration contracts). Describe the general operation of these resources and any issues, challenges, or expected changes to these resources in the next five (5) years. (See 10 CFR § 905.11 (b) (1)).

**Coal**

Midwest contracts a 150 MW portion of the 2,164 MW Jeffrey Energy Center. Jeffrey was commissioned in 1978 and is in St. Marys, Kansas.

**Natural Gas**

Midwest's natural gas resources are in northwest Kansas and consist of a 12-unit 101 MW reciprocating engine energy center and the 13 MW Colby Combustion Turbine ("CT"). Colby CT is a seldom dispatched peaking unit.

**Hydro**

Midwest has a 3 MW WAPA Hydro Contract.

**Wind**

Midwest currently has three wind contracts ranging from 25 MW to 57 MW. Smoky Hill is comprised of two contracts and is in central Kansas. Kingman is the final contract, located 70 miles west of Wichita.

**Oil**

Midwest owns the 2 MW internal combustion engine with a scheduled retirement date of 12/31/2020. Bird City is a seldom dispatched peaking unit.



**Existing Generation Resources:**

List your current supply-side resources, including conventional resources and renewable generation. If you do not own any generating resources, insert N/A in the first row. Insert additional rows as needed.

<b>Resource Description</b> (Identify resources as base load, intermediate, or peaking)	<b>Fuel Source</b>	<b>Rated Capacity (MW)</b>	<b>In-Service Date</b> (Year)	<b>Estimated Expiration/Retirement Date</b> (Year)
Intermediate	NG	101	06/2008	06/2048
Peaking	NG	13	01/1973	06/2030
Peaking	DFO	2	01/1954	12/2020

**Existing Purchase Power Resources:**

List your current purchase power resources. Define whether the contract provides firm service, non-firm service, all requirements or another type of service. Include Western Area Power Administration resources. If applicable, include a summary of resources that are under a net metering program. Insert additional rows as needed.

<b>Resource Description</b>	<b>Fuel Source</b> (If applicable)	<b>Contracted Demand (MW)</b>	<b>Type of Service</b> (Firm, Non-firm, Requirements, Other)	<b>Expiration Date</b> (Year)
JEC	Coal	150	Firm	2025
Westar Capacity	Fleet	120	Firm	2022
Smoky Hill 1&2	Wind	50	Other	2028
Kingman Wind	Wind	57	Other	2037
WAPA	Hydro	3.09	Firm	2054

**SECTION 4****EXISTING DEMAND-SIDE RESOURCES**

Demand-side programs alter a customer's use pattern and include energy conservation, energy efficiency, load control/management, education, and distribution system upgrades that result in an improved combination of energy services to the customer and the ultimate consumer.

**Existing Demand-Side Resources:**

List your current demand-side programs, including energy conservation, energy efficiency, load control/management, education, or maintenance plans, or system upgrades. Programs may impact the utility distribution system, municipally owned facilities, and/or end-user energy consumption. Refer to Section 9 of this form for a list of example programs. Insert additional rows as needed.

*(See 10 CFR § 905.11 (b) (1)).*

<b>Program Description</b>	<b>Estimated Program Savings (MW and/or MWh if known)</b> (Include annual impact and impact over the life of the program if known.)
HowSmart program – This program funds via low interest loans up front energy efficiency costs such as HVAC and insulation for Midwest Customers reducing energy consumption.	2020 – 158 KW 297,059 kWh  Total – 2,656 KW 6,511,171 kWh

## SECTION 5

# FUTURE RESOURCE REQUIREMENTS AND RESOURCE OPTIONS

### **Balance of Loads and Resources (Future Resource Requirements):**

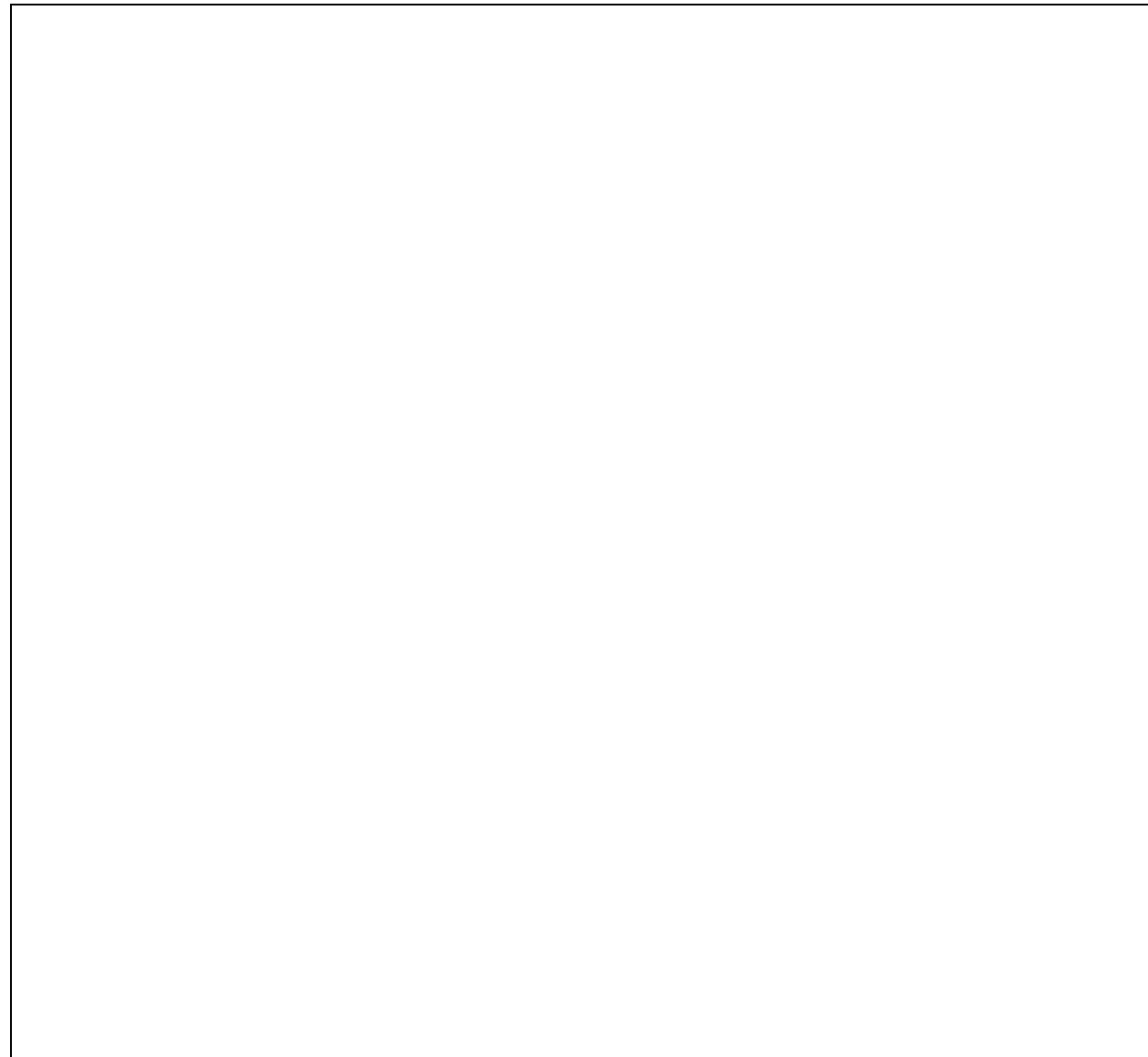
Provide a narrative statement that summarizes the new resources required to provide retail consumers with adequate and reliable electric service during the 5-year resource planning period. Identify any federal or state regulations that may impact your future resource requirements. If you are not experiencing or anticipating load growth and a need for new resources, describe your current procedure to periodically evaluate the possible future need for new resources.

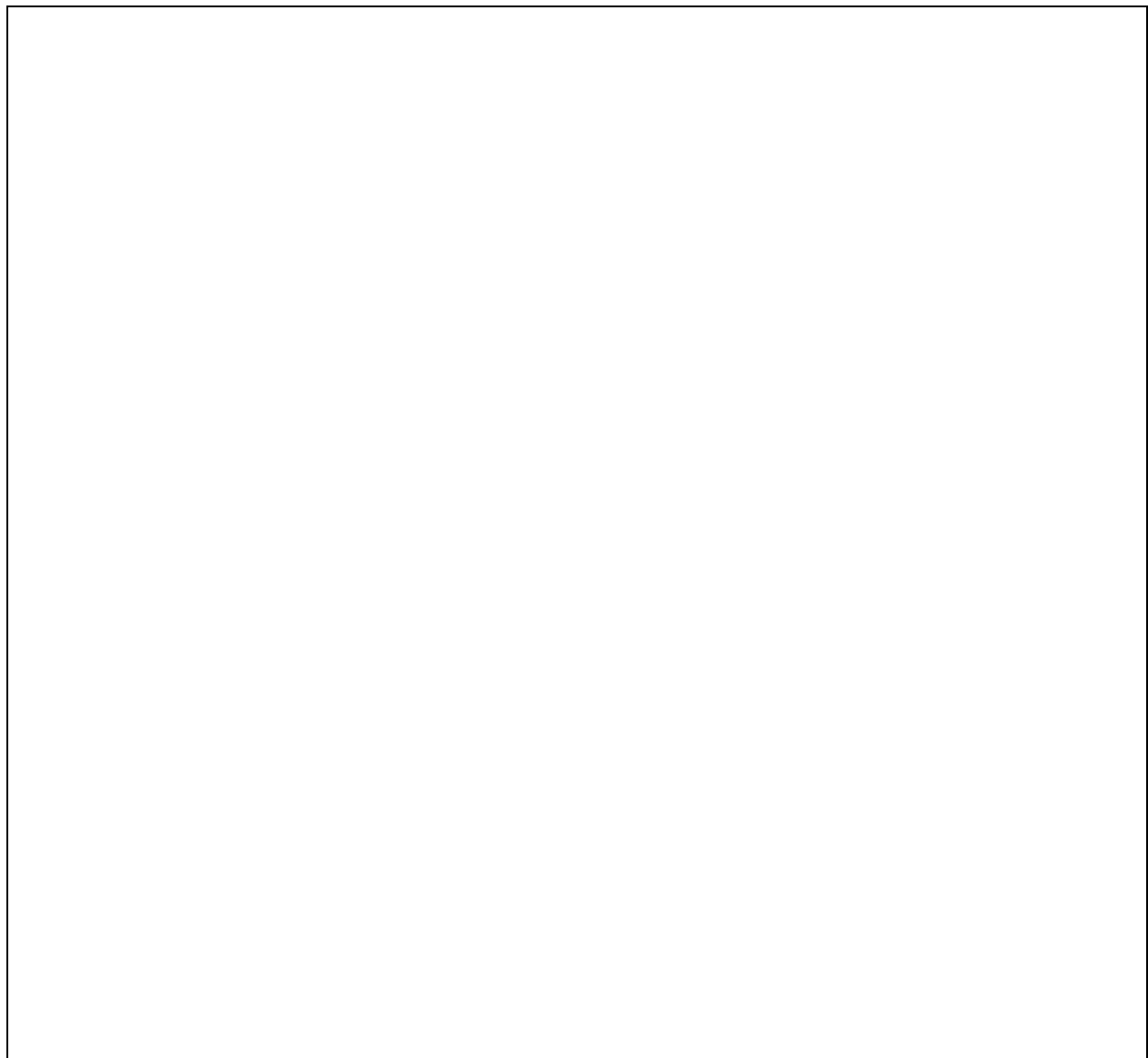
#### 1. Electric Power Industry Review

- a. The electric power industry continues to be a target of increased regulations regarding water, coal combustion by-products, and air emissions, which will continue to impact the economic viability of aging coal-fired resources with additional investment and/or operational costs.
- b. Overall, the power industry has experienced continued interest in wind and solar development. This interest is driven by technological advancements, which have lowered costs and increased energy production, as well as subsidies through tax incentives and renewable standards. The development of wind has been particularly robust in the Southwest Power Pool and is expected to continue with the overall interest in renewable resources throughout the United States.

#### 2. Economic Analysis

- a. Specific to Midwest's power supply, the most immediate area of need will be fulfilling resource adequacy requirements that are currently served in part by the Westar Capacity-Only contract when the contract expires at the end of 2022.
- b. Capacity-only contracts provide a low-cost option to meet current resource adequacy requirements while maintaining future flexibility. Participating in new capacity-only contracts does not provide a hedge against high market prices but will allow new technologies time to mature before making long-term and capital-intensive investments.
- c. The economic analysis indicates that renewable participation, such as a solar or wind resource, could be more economical for Midwest's power supply portfolio than extending the JEC contract at current levels (even while including a 50 percent reduction in JEC fixed costs when extending) or pursuing a natural gas-based peaking resource.
- d. The 100 MW Solar & 100 MW Wind scenario (Scenario 5b) provides an attractive option for Midwest based on the NPV compared to the other scenarios. The 100 MW Solar outside of Olathe, KS resulted in the second-most favorable NPV costs among the scenarios and sensitivities, with the 100 MW wind in Nemaha County, KS having the third-most favorable NPV costs





### **Identification of Resource Options**

Identification and comparison of resource options is an assessment and comparison of existing and future supply-side and demand-side resources available to a customer based upon size, type, resource needs, geographic area, and competitive situation. Resource options evaluated must be identified. The options evaluated should related to the resource situation unique to each WAPA customer as determined by profile data such as service area, geographical characteristics, customer mix, historical loads, projected growth, existing system data, rates, financial information, and load forecast. *(See 10 CFR § 905.11 (b) (1)).*

Considerations that may be used to develop potential resource options include cost, market potential, consumer preferences, environmental impacts, demand or energy impacts, implementation issues, revenue impacts, and commercial availability. *(See 10 CFR § 905.11 (b) (1) (iii)).*

**Future Supply-side Options:**

List the future supply-side resource options that were considered and evaluated, including, but not limited to conventional generation, renewable generation, and power purchase contracts. Include a brief discussion on the applicability of each option for further consideration or implementation based on your system requirements and capabilities. If new resources are not required during the 5-year resource planning period, please indicate that below. Insert additional rows as needed.  
(See 10 CFR § 905.11 (b) (1)).

<b>Supply-Side Option</b>	<b>Applicability for Implementation or Further Consideration</b>
Detailed report attached.	Various fuel types evaluated.

**Future Demand-side Options:**

List the future demand-side resource options that were considered and evaluated. Demand-side programs alter a customer’s use pattern and include energy conservation, energy efficiency, load control/management, education, and distribution system upgrades that result in an improved combination of energy services to the customer and the ultimate consumer. Include a brief discussion on the applicability of each option for further consideration or implementation based on your system requirements and capabilities. Insert additional rows as needed. (See 10 CFR § 905.11 (b) (2)).

<b>Demand-Side Option</b>	<b>Applicability for Implementation or Further Consideration</b>
TOU rates	TOU rates have been evaluated and are slated for implementation for the residential and small commercial classes starting in 2022 or 2023.

**Resource Options Chosen:**

Describe the resource options that were chosen for implementation or further consideration and clearly demonstrate that decisions were based on a reasonable analysis of the options. Resource decisions may strike a balance among applicable evaluation factors such as cost, market potential, customer preferences, environmental impacts, demand or energy impacts, implementation issues or constraints, revenue impacts, and commercial availability. (See 10 CFR § 905.11 (b) (1) (iv)).

No new resources acquired. Evaluation will continue, see details in report.



**Environmental Effects:**

To the extent practical, WAPA customers must minimize environmental effects of new resource acquisitions and document these efforts. IRPs must include a qualitative analysis of environmental impacts in summary format. Describe the efforts taken to minimize adverse environmental effects of new resource acquisitions. Describe how your planning process accounts for environmental effects. Include a discussion of policies you conform with or adhere to, and resource decisions that have minimized or will minimize environmental impacts by you and/or your wholesale electricity supplier(s). WAPA customers are neither precluded from nor required to include a qualitative analysis of environmental externalities as part of the IRP process. If you choose to include a quantitative analysis, in addition to the summary below, please attach separately. (See 10 CFR § 905.11 (b) (3)).

While significant debate continues about the science behind the global warming issues, the utility industry has already seen a significant impact on resource planning. It is quite clear that it will be increasingly difficult to construct new coal-fired generating resources, and that emissions restrictions on existing coal plants will continue to tighten. Though the appetite for so-called cap-and-trade programs appears to have diminished for now, it remains prudent to factor these issues into any resource planning program. The IRP does exactly that, testing a number of different regulation and cost scenarios to develop portfolio recommendations that stand up to a variety of outcomes.

Fuel Type - For now, natural gas seems to be the preferred fuel for new dispatchable generation facilities. This too was factored into the development of the IRP. In fact, as noted above, the new generation proposed for further consideration by Midwest Energy is all gas-fired.

CO2 Emission Liability - An increasing concern regarding global climate change has put specific emphasis on the carbon intensity associated with different power generating resource options. Although coal-fired generation remains one of the most efficient sources of power generation, its potential environmental impacts pose a growing concern to the public and utility planners alike. Moreover, the potential advent of significant costs associated with CO2 emissions constitutes a major risk for coal plant owners.

Water Supply - Siting of new generation, particularly in the Midwest Energy zone, needs to take into consideration of the lack of a stable long-term water supply. Any generation requiring large water quantities are probably not a favorable solution.

## SECTION 7

## PUBLIC PARTICIPATION

### **Public Participation:**

Customers must provide ample opportunity for full public participation in preparing and developing an IRP. Describe the public involvement activities, including how information was gathered from the public, how public concerns were identified, how information was shared with the public, and how your organization responded to the public's comments. (See 10 CFR § 905.11 (b) (4)).

Midwest Energy is a customer-owned cooperative. That means the company is entirely focused on meeting the needs of its customer-owners, without the distraction of meeting the needs of a separate group of owners not served by the cooperative. The actions taken by Midwest Energy are governed by a member-elected Board of Directors. Their involvement includes review of the annual and long-term business plans, review/approval of the annual budget, updates on progress in the operation of all facets of the business, approval of plans to change rates, etc. This process includes the Integrated Resource Plan itself, as well as decisions to execute contracts, build major new facilities, borrow funds, and other strategic decisions. As elected representatives of the customer-owners, their objective is to ensure that the Cooperative acts in the best interests of the customer-owners. Midwest Energy hosts an annual meeting that is open to all customer-owners; this provides an opportunity for customers to raise questions and concerns in an open forum. Current Comments, which is a monthly publication that accompanies a customer-owners bill, also keeps customers informed and apprised of any supply and demand side activities impacting Midwest Energy. Any time there is proposed change to rates an open meeting is scheduled and attendance is open to the public.

In regard to the IRP, federal regulations also require that Midwest Energy post its updates or revisions to its IRP for public review and comments. Historically, Midwest Energy has updated its resource plans at intervals of roughly three years. The most recent update was completed in 2019.

As a further aid to customer involvement and understanding, various programs are presented during the Annual Meeting of Members of Midwest Energy. The first of these programs provided an overview of the energy efficiency programs utilized by Midwest Energy, including the HowSmart® program. Interest in this program remains high, as evidenced by the strong participation of customers and national recognition of the program itself. A number of questions about the program were asked and answered during the presentation.

## SECTION 8

# ACTION PLAN & MEASUREMENT STRATEGIES

### **Action Plan Summary:**

Describe the high-level goals and objectives that are expected to be met by the implementation of this resource plan within the 5-year resource planning period. Include longer term objectives and associated time period(s) if applicable. (See 10 CFR § 905.11 (b) (2)) and (See 10 CFR § 905.11 (b) (6)).

The plan of action was built on the outlook for the period 2020 through 2030. Most of the significant recommendations provided in the IRP are intended to be implemented in the 2020-2025 timeframe, except for those related to additions of economic wind energy and solar energy, which extend beyond 2025. The specific Action Plan items recommended in the IRP and their current status are summarized below:

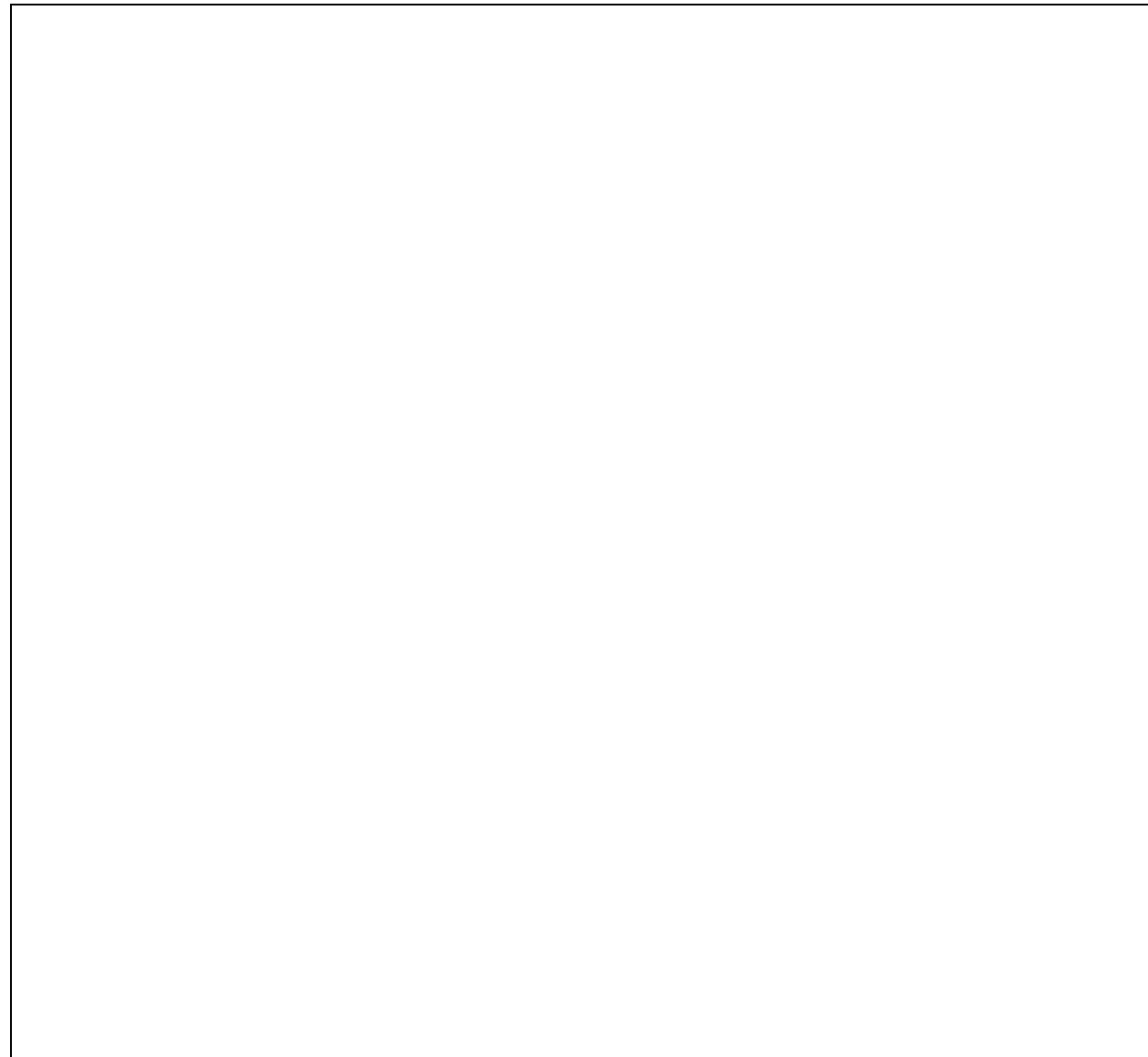
**Negotiate PPAs:** By the beginning of 2022, finalize negotiations of new PPAs for UML type contracts with the preferred supplier. Due to the attractiveness of owned peaking resources, UML contracts should be negotiated with the shortest lengths possible.

**Evaluate Renewable Energy Expansion:** Current Production Tax Credits for renewable generation and reduction of PPA costs associated with both Solar and Wind continue to make renewable a viable economic alternative. Exploration of further expanding Midwest's renewable portfolio should be considered in the 2020-2030 timeframe, in particular prior to the expiration or phasing out of the existing PTCs.

**GHG Emissions Reductions:** Protect Midwest Energy as much as possible against imprudent risk management of carbon and fuel cost exposures. Prudent management language should be included in new contractual arrangements.

Specific Recommendations resulting from deep dive 2019 IRP:

1. Midwest should continue to evaluate potential participation in capacity-only and renewable contracts by conducting a power supply request for proposals. This will allow Midwest to compare real offers to what assumptions were used in this economic evaluation. Time is of the essence to issue this request for proposals as the tax credits for renewables are set to expire soon.
2. Midwest should maintain dialogue with Westar, in regard to modifying or extending existing power supply contracts.



**Specific Actions:**

List specific actions you will take to implement your plan over the 5-year planning horizon.

**New Supply-Side Resource Acquisitions:**

List new resource options your organization is planning to implement, investigate, or pursue in the next five years. Include conventional generation, renewable resources, net metering programs, and purchase power contracts. Include key milestones such as the issuing an RFP, executing a contract, or completing a study. (See 10 CFR § 905.11 (b) (2)).

<b>Proposed New Resource</b>	<b>Begin Date</b>	<b>Est. New Capacity (MW)</b>	<b>Milestones to evaluate progress and/or accomplishments</b>
Combustion Turbine	6/1/2025	216	See report
JEC Extension	6/1/2025	150	See Report
Westar Capacity Only	1/1/2023	120	See report
Smoky Hill 1 and/or 2	1/1/2028	50	See report
Solar PPA	1/1/2023	50/100	See report
Wind PPA	1/1/2023	50/100	See report

## New Demand-Side Programs & Energy Consumption Improvements:

List energy efficiency, energy conservation, and load management programs your organization is planning to implement or evaluate in the next five years. Include key milestones to evaluate the progress of each program. Insert additional rows as needed. (See 10 CFR § 905.11 (b) (2)).

Example programs could include:

- Education programs & communications
- Energy efficient lighting upgrades
- Energy audits
- Weatherization & Insulation
- Window/doors upgrades
- Boiler, furnace or air conditioning retrofits
- Programmable thermostats
- Equipment inspection programs
- Use of infrared heat detection equipment for maintenance
- Tree-trimming/brush clearing programs
- Electric motor replacements
- Upgrading distribution line/substation equipment
- Power factor improvement
- Loan arrangements for energy efficiency upgrades
- Rebate programs for energy efficient equipment
- Key account programs
- Load management programs
- Demand control equipment
- Rate designs
- Smart meters (Time-of-Use Meters)

Proposed Items	Begin Date	Est. kW capacity savings per year	Est. kWh savings per year	Milestones to evaluate progress and/or accomplishments
TOU	2022 - 2023	5-15 MW	Minimal	Full implementation of rate structure will not be achieved until 2024-2025
Smart Meters (AMI)	2021			Full system deployment in 2021.

## Measurement Strategies:

Describe your plan to evaluate and measure the actions and options identified in the IRP to determine if the IRP's objectives are being met. The plan must identify and include a baseline from which you will measure the IRP implementation's benefits. (See 10 CFR § 905.11 (b) (6)).

A Resource Plan is intended to be a living document. As such, it is imperative that Midwest Energy continually assess its progress in regard to the actions proposed in the IRP, and that it be prepared to modify and adapt the plan as conditions change. The IRP completed in 2019 will not have an indefinite life.

Although not an all-inclusive list, the following issues could change substantially over the next 2-4 years, and thereby impact the validity of the current IRP:

- Prices for natural gas and coal, including transportation;
- Emissions requirements for both coal-fired and gas-fired generating resources, existing and new;
- Inception of new climate control legislation, including cap-and-trade protocols, emissions allowance trading, etc.
- Technology developments related to emissions control, unit efficiency or capital cost changes;
- Retirement of existing generating units;
- Changes in customer energy use patterns, efficiency/conservation practices, and overall load growth;
- Further penetration of demand-side management technologies and customer acceptance, in particular TOU rates and the impact of full implementation;
- Development of additional renewable generating resources on a regional or national basis, as well as technology improvements in wind, solar and other so-called green resources;
- Continued appetite for transmission grid expansion;
- General economic factors, including interest rates, access to capital, and customer preferences.

Midwest Energy will use several metrics to assess whether its business practices are consistent with the current IRP. For example, it will obviously continue to measure the energy sales and demand requirements of its customer base, and comparing those requirements to available generating resources. In both the long-term and the near-term this will play a significant role in a determination of the need for additional generation capacity, either owned or purchased.

With respect to energy efficiency programs like HowSmart® Midwest Energy will strive to keep the program fresh and viable. Since the program is based on the concept that energy efficiency improvements funded in the program must pay for themselves over time, assessment of those expected changes in energy use is a key metric in assessing and operating the program.

In a similar fashion, Midwest Energy will continue to look for ways to expand the use of load control technologies, including the introduction and perhaps future expansion to other rate classes of TOU rates. In the first year of use in 2010 the eligible participants were limited to electric irrigation customers that met specific criteria. The technology deployed allowed for the measurement of load interruption success, and this will continue to be a key metric in annual assessments of the efficacy of the program. These annual assessments will form the basis for expansion of, or changes to, the demand-side management programs.

Upon completion of the 2016-2019 IRP, Midwest Energy will be working directly on the steps enumerated

previously related to market condition assessment and generation expansion planning. As each of these steps are executed there will be a need to re-assess whether the Cooperative is still following the guidance provided in the IRP, and indeed whether it should continue to follow those recommendations. This will lead to decisions as to whether to move forward with construction of one or more generating resources, and to a decision as to when the next update of the IRP is required.

Additionally, the Western Area Power Administration requires that entities with hydro allocations file an annual report to update their progress in meeting the recommendations of their respective integrated resource plans. Midwest Energy is no different. That annual update process includes several quantitative assessments related to resource availability, load growth, and energy efficiency/demand response program utilization. In general, the various Action Items summarized above, and detailed in the IRP documents, are themselves the benchmark for continual review of the progress toward meeting the recommendations provided in the IRP.



**SECTION 9****SIGNATURES AND APPROVAL****IRP Approval:**

Indicate that all of the IRP requirements have been met by having the responsible official sign below; **and** provide documentation that the IRP has been approved by the appropriate governing body (i.e. provide a copy of the minutes that document an approval resolution). (See 10 CFR § 905.11 (b) (4)).

<u>William Dowling</u> (Name – Print or type)	<u>V.P. Engineering &amp; Energy Supply</u> (Title)
<u>William Dowling</u> (Signature)	<u>December 16, 2022</u> (Date)

**Other Information:**

(Provide/attach additional information if necessary)

Detailed resource plan attached.

**IRP Posting Requirement:**

10 CFR § 905.23 of the EPAMP as amended effective July 21, 2008, facilitates public review of customers' approved IRPs by requiring that a customer's IRP be posted on its publicly available Web site or on WAPA's Web site. Please check the method in which you will comply with this requirement within thirty (30) days of receiving notification the IRP has been approved:

	Customer will post the approved IRP on its publicly available website and send the URL to WAPA.
X	Customer would like WAPA to post the approved IRP on WAPA's website.

**IRP Updates:**

WAPA's customers must submit updated IRPs every five (5) years after WAPA's approval of the initial IRP.

**IRP Annual Progress Reports:**

WAPA's customers must submit IRP progress reports each year within thirty (30) days of the anniversary date of the approval of the currently applicable IRP. Annual progress reports can be submitted using WAPA's on-line reporting tool, which can be accessed at: <https://www.wapa.gov/EnergyServices/IRP/Pages/irp.aspx>