Exhibit No. 6

Evergy West – Exhibit 6
Kayla Messamore
Supplemental Direct Testimony
File No. EA-2022-0328

Public Version

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MISSOURI PUBLIC SERVICE COMMISSION

CASE NOS.: EA-2022-0328

SUPPLEMENTAL DIRECT TESTIMONY

OF

KAYLA MESSAMORE

ON BEHALF OF

EVERGY MISSOURI WEST

Kansas City, Missouri
December 2022

SUPPLEMENTAL DIRECT TESTIMONY

OF

KAYLA MESSAMORE

Case No. EA-2022-0328

Q: Please state your name and business address.

A: My name is Kayla Messamore. My business address is 1200 Main, Kansas City, Missouri 64105.

Q: Are you the same Kayla Messamore who previously submitted Direct Testimony in this docket on August 18, 2022?

A: Yes, I am.

Q: Who are you testifying for?

A: I am testifying on behalf of Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("Evergy Missouri West", "EMW", or the "Company").

Q: What is the purpose of your Supplemental Direct Testimony?

A: The purpose of my testimony is to explain how the Integrated Resource Plan ("IRP") is used to identify the need for new resources in general and for the Persimmon Creek Wind Farm ("Persimmon Creek") specifically in this case. I will describe how recent changes, particularly the newly-passed Inflation Reduction Act ("IRA"), do not eliminate EMW's need or the fact that Persimmon Creek is the best available resource to meet it. Finally, I will highlight additional sources of value associated with Persimmon Creek which are not captured in the Company's IRP and speak to the additional costs for transmission service from

Persimmon Creek to EMW's load which may be incurred, but which do not impact whether Persimmon Creek is able to meet EMW's needs.

Q: Are you sponsoring any exhibits with your Supplemental Direct testimony?

A: Yes. I am sponsoring Schedule-KM-1 EMW 2022 Change in Plan Filing and Confidential Schedule-KM-2 Wind and Solar LCOE.

Q: Please summarize your Direct and Supplemental Direct testimony.

A: The purpose of the IRP process is to identify a Preferred Resource Plan which meets customers' long-term energy and capacity needs at the lowest risk-adjusted cost. Through the 2021 and 2022 IRPs, wind resources were identified as a key part of EMW's overall Preferred Plan. Wind added in the first five years of the Plan reduced costs for customers by $64 million as a result of economically meeting EMW's need for capacity and energy. Subsequently, the Change in Plan filing associated with Persimmon Creek identified an incremental $66 million in customer savings because Persimmon Creek was a lower-cost, higher-output resource option than the more "generic" wind resources originally included in the IRP analysis. Wind, and Persimmon Creek specifically, helps meet EMW's current need for an economic energy source particularly in today's high market energy price environment while providing some accredited capacity towards meeting EMW's need for capacity by 2024. From an energy perspective, EMW is generally a net buyer from the Southwest Power Pool ("SPP") market, and has been for many years. In the low market price environment of recent years, EMW customers benefited from low-cost energy without the fixed costs associated with owning or contracting for resources. Now that elevated natural gas prices have driven up wholesale energy prices, with an expectation that these prices will remain volatile and high going forward, EMW customers would benefit from procuring new sources of economic energy. Persimmon Creek represents the most economic available option for addressing wholesale energy market risk and EMW's energy need.

The passage of the IRA and its impact on renewable economics has not changed this fact. Recent renewable market comparatives, including those evaluated through the Request for Proposal which led to the selection of Persimmon Creek, are still more expensive than Persimmon Creek, with a trend of prices increasing after the passage of the IRA – not decreasing. Taking advantage of this low-risk (because it is already in operation), low-cost source of energy – as opposed to waiting for some speculative "better" project in the future – is the best way to meet EMW's current needs. Without this project, EMW will continue to be in the exact same position of wholesale energy market exposure going forward and there is no guarantee that any future project would actually be any better.

Q: Please describe the IRP process in Missouri.

A: The IRP process is completed under the Commission's Electric Utility Resource Planning rules found in 20 CSR 4240-22. The IRP process results in the selection of a Preferred Plan which is the combination of supply-side and demand-side resources which EMW will use to meet forecasted customer requirements for the next twenty years. These "customer requirements" equate to EMW's customers' needs over the 20-year planning horizon.

Q: What is Evergy's objective in the IRP process?

A: Per 20 CSR 4240-22.010(2), "the fundamental objective of the resource planning process at electric utilities shall be to provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, and in a manner that serves the public interest and is consistent with state energy and environmental policies." To achieve this objective, the IRP is performed using minimization of net present value of revenue requirements ("NPVRR") as the primary objective function. The IRP also considers potential risks and uncertainties which could impact the economics of a resource plan ("critical uncertain factors"), and compares demand-side and supply-side resources on an equivalent basis.

Q: How is the IRP used to assess the need for new resource additions?

A: The IRP is based on an integrated analysis of overall resource plans ("Alternative Resource Plans") which consist of retirements, supply-side additions, and demand-side additions – along with the corresponding capital and operating costs of all component resources. Each resource plan is built in order to meet forecasted customer requirements or *needs* for both capacity and energy and, ultimately, Preferred Plans are selected with a primary objective of meeting those needs at the lowest costs for customers. Fundamentally, this integrated analysis is an assessment of the most cost-effective long-term resource plan for customers on a risk-adjusted basis. Given an inherently uncertain future, the concept of risk or risk mitigation is a key consideration in the IRP analysis, as I will explain more later in my testimony.

Within the IRP, there are two primary needs which are evaluated in order to determine whether new resource additions are necessary. First, is capacity. As a load-serving entity, EMW's planning is built around maintaining sufficient accredited capacity resources to meet its forecasted peak load plus the planning reserve margin required by the SPP. The second need is energy. As a participant in the SPP Integrated Market ("SPP IM"), EMW does not provide energy from its resources (or power purchases) to match its load in every hour, as it would have when it operated as its own Balancing Authority before the advent of the SPP IM. However, economic energy sources within EMW's portfolio mitigate EMW's exposure to SPP wholesale market prices, making them a valuable mechanism to reduce overall customer costs. As a result, when I reference EMW's "energy need" in my testimony, I will not generally be referring to a need for physical energy (i.e., electrons produced at the time EMW needs them) per se, but to the need for economic generation sources to mitigate exposure to market energy costs. I will expand upon each type of need evaluated in the IRP below.

Q: How does the IRP assess when resources are required to meet a capacity need?

A: EMW's capacity need is forecasted over the next 20 years based on its projected summer peak load plus SPP's planning reserve margin (historically 12%). Each resource plan built in the IRP meets this capacity requirement by ensuring the accredited capacity from the resource plan is at least equal to this requirement (112% of forecasted summer peak). If EMW's portfolio of existing accredited capacity is less than this requirement, new capacity is needed.

Q: How are potential retirements factored into this assessment?

A: Alternative Resource Plans can include the retirement of existing resources in various years. Ultimately, the evaluation performed in the IRP is whether or not the savings gained from a retirement (i.e., avoided O&M and capital costs, net of lost SPP market margins) are outweighed by the costs of replacing the resource (i.e., O&M and capital costs for resource additions, net of forecasted SPP market margins). If the net savings associated with a retirement are greater than the net costs to replace it, then the Alternative Resource Plan which includes the retirement will be more cost-effective for customers. This means that potential retirements are a factor in determining EMW's capacity need, but it also demonstrates why the IRP is an integrated analysis. Retirements can only be evaluated in the context of potential replacements and additions can only evaluated in the context of potential future retirements.

Q: Are resources only added in the IRP when the portfolio would otherwise fall below its minimum capacity requirement?

A: No. Resources can be and are at times added "early" (prior to an actual capacity shortfall) for at least four reasons. First, the resource could meet an energy need – providing cost-effective energy to mitigate purchased power costs to the benefit of customers even when there is not a capacity shortfall. Second, new capacity additions can be "lumpy" (e.g., large natural gas-fired combined cycle plant) which means they likely will not align exactly with the timing of actual capacity shortfalls. Third, adding resources in excess of current requirements mitigates the risk of shortfall if capacity requirements are increased (as they have been this year, which I will describe later in my testimony). Finally, assuming that resources can be added "just in time" (i.e., in the year when a shortfall is forecasted) puts risk on customers in the case of construction or procurement delays which could ultimately leave EMW short of its capacity requirements. Planning for some buffer in resource additions (i.e., adding them in advance of forecasted shortfalls) is good utility practice and mitigates risk for customers.

Q: How does the IRP assess when resources are required to meet an energy need?

A: As I mentioned previously, energy needs are less black and white than capacity needs in today's Integrated Marketplace because there is not a strict "energy requirement" EMW has to meet. The IRP does assess physical energy needs in that hourly import constraints are applied to ensure net market purchases (EMW load net of generation) in each hour do not exceed physical (transmission) import capabilities, but given the significant import capacity available with EMW's neighbors, this is not typically a constraint that is reached in the IRP analysis. The more relevant energy need is for economic energy sources that can mitigate EMW customer's exposure to wholesale energy costs. "Economic energy sources" are those which will be economically dispatched (short-run marginal cost of generation is less than wholesale energy price) by SPP and generate market margins which offset EMW's purchased power costs (costs associated with purchasing EMW load from the SPP market). Given energy need is largely an economic assessment, the IRP evaluates this need through the calculation of all-in revenue requirements (including net fuel and purchased power costs as well as capital and O&M) for different resource plans.

Q: How is risk of future market changes factored into the assessment of energy needs?

A: As we have seen just over the past two years, there can be significant variation in wholesale energy market prices (from $23/MWh on average in January 2021 to $91/MWh on average in August 2022[1]). These variations can dramatically alter the definition of "economic energy sources" and can also heighten the need for these sources in order to mitigate extremes in purchased power costs. In order to evaluate the "risk mitigation" benefit of different resource plans, the IRP contains many different market price scenarios to assess the energy value provided by each alternative resource plan in these different potential market environments. Using an example for a specific resource, if market prices are forecasted to remain below its short-run marginal costs most of the time, the resource will do little to meet EMW customer's need for economic energy as it will not be dispatched by SPP. If market prices are forecasted to frequently be higher than the resource's marginal costs, the value of this resource will be much greater as it will be dispatched and earn a margin on energy sales. Because solar and wind are generally zero marginal cost resources, they will be "economically dispatched" essentially whenever the sun is shining or the wind is blowing (respectively), producing SPP margins.

In the most recent IRP, nine different market price scenarios were utilized to generate a broad band of potential market environments (from 2030 average price

[1] Average SPP South Hub Day Ahead Price.

of $17/MWh to $111/MWh). Simplistically, EMW's energy need is greater in higher market price environments because it is more costly to be exposed to the market. In low price environments, relying on the market can be much more cost-effective then building / purchasing new energy resources.

Q: Once a need for capacity and/or energy is identified, how is the optimal resource type selected to meet it within the IRP?

A: Historically, Alternative Resource Plans were created manually with incremental changes to additions / retirements made one at a time to identify the revenue requirement impact of each decision (i.e., whether the decision increased or decreased customer costs, all else being equal). In this approach, a mix of different resource types will be evaluated one-by-one to assess which resource type is the most cost-effective. Beginning with the 2022 IRP, EMW is supplementing this method with capacity expansion modeling. Capacity expansion modeling identifies the lowest-cost portfolio of resource additions given a specific market price scenario and forecasted capacity need. Both approaches are designed to meet EMW's forecasted capacity need while also building a portfolio of economic energy sources. Ultimately, whether a resource plan is the most economic solution to meet both capacity *and* energy needs is determined based on its overall cost (NPVRR).

Q: How is the risk or uncertainty around market prices factored into this determination?

A: NPVRR is calculated for each Alternative Resource Plan across each different scenario and a probability-weighted average (expected value) is calculated for each plan. These expected values are then compared across Alternative Resource Plans to identify the resource plan which is lowest cost on a risk-adjusted basis. All NPVRR values I will mention in my testimony are based on expected value calculations.

Q: Does EMW have a capacity or energy need?

A: Yes, it has both. As identified in EMW's Change in Plan filing[2], EMW was forecasted to need 150 MW of market capacity in addition to Persimmon Creek in order to meet its 2024 capacity requirements. The forecast was based on a 12% planning reserve margin and is now understated given SPP has increased the planning reserve margin to 15% beginning with summer 2023, which I will discuss in more detail later in my testimony. In this Preferred Plan, Persimmon Creek was assumed to provide 20 MW of accredited capacity, which means that EMW's capacity need is at least 170 MW in 2024.

[2] IRP Change in Plan filing made 9/27/2022 in Case No. EO-2023-0115. Included as Schedule KM-1.

Current Preferred Plan

Year	Wind (MW)	Solar (MW)	Thermal (MW)	Capacity Only (Annual MW)	DSM (Annual MW)	Retirements (MW)
2022					118	
2023	199				161	
2024				150	186	
2025				125	206	
2026	72			100	227	
2027				100	246	
2028		48		75	261	
2029		72		25	278	
2030		72			291	
2031		72		150	296	155
2032		72		125	296	
2033		72		150	297	
2034		72		150	299	
2035		72		150	300	
2036			237		302	
2037					306	
2038					309	
2039					311	
2040			237		310	246
2041					309	

In terms of energy, EMW has been a net purchaser from the SPP energy market since the market was created in 2014.

**EMW SPP Market Net Position[3]
(Million MWh, negative value denotes that EMW is a net purchaser from SPP)**

[redacted]

When market prices were ~$20/MWh in 2019-2020[4] and were forecasted to remain low as a result of plentiful shale gas production driving low natural gas

[3] Net position shown does not include any netting as required by FERC Order 668.
[4] SPP South Hub Day Ahead Average Price 2019-2020.

prices, this meant that EMW was often able to purchase energy from the market more cost-effectively (in the short-term) than it could have built or procured new energy resources. Now market prices have climbed to an average of $55/MWh[5] and the expansion of Liquified Natural Gas ("LNG") exports, combined with tighter domestic production, have created an expectation of elevated gas and energy prices for the long-term. Tightening environmental regulations (e.g., carbon tax or emissions restrictions) on fossil resources in the future will also create market price pressure going forward as fixed-cost "baseload" resources (e.g., coal) are retired and market prices become more dependent on marginal natural gas units which are impacted by elevated natural gas prices.

The last two years have demonstrated the impact that elevated gas prices have on EMW given its market dependence.

<u>EMW Fuel & Purchased Power Costs versus Henry Hub Natural Gas Price[6]</u>

[redacted]

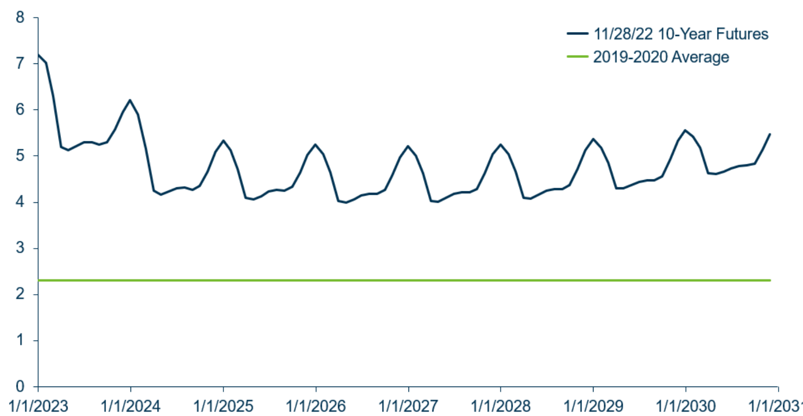
Current market expectations are that natural gas prices will not return to the levels seen prior to 2021 (See chart below). As a result, EMW has an increased need for

[5] November 2022 Year-to-Date SPP South Hub Day Ahead Average Price.

[6] Monthly Henry Hub Natural Gas Spot Price per Energy Information Agency ("EIA").

energy to offset its exposure to the wholesale market in both the near- and long-term.

Henry Hub Natural Gas Price ($/mmbtu)[7]



Q: What options are available to meet these needs?

A: Simplistically, the resource options evaluated in the IRP to meet capacity and energy needs are wind, solar, natural gas, and market capacity purchases. Going forward, other resource types (such as battery energy storage) will be evaluated for future deployment, but I will exclude those from this discussion given they are less likely to be economic or practical in meeting near-term needs. In the table below, I've summarized each resource type based on how it meets capacity and energy needs at a very high level:

Resource Type	Accredited Capacity Value (% Accreditation Assumed)	Typical Energy Production (% Net Capacity Factor)	Fixed Cost of Energy?
Wind	10%	45%	Yes
Solar	50%	25%	Yes
Natural Gas Combustion Turbine	100%	10%	No
Natural Gas Combined Cycle	100%	65%	No
Capacity Market Purchase (Bilateral Capacity Contract)	100%	NA	No

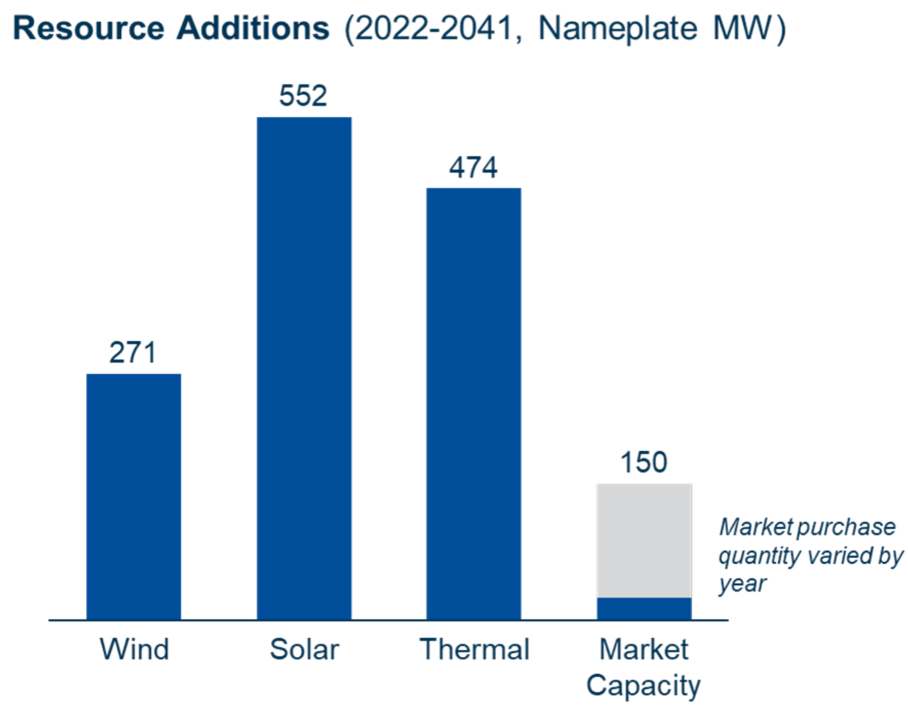
[7] 10-Year Futures based on New York Mercantile Exchange ("NYMEX"); 2019-2020 Average based on EIA Natural Gas Spot price.

Natural gas resources provide by-far the highest expected capacity accreditation (although this accreditation may be reduced in the future as SPP implements Performance-Based Accreditation for thermal resources), but they also have variable energy costs due to their dependence on natural gas prices. Given SPP market prices are frequently set by natural gas-fired units, this means that the energy margin potential for new natural gas units would be more limited because both energy production costs and SPP market prices would be moving in line with natural gas prices. Bilateral capacity purchases ("market purchase") can also provide high accreditation percentages, but provide no accompanying energy production and therefore receive no wholesale margins.

In contrast to these more capacity-centric sources, solar and wind both generally provide fixed-cost energy in combination with lower levels of capacity accreditation. This means that solar and wind can provide wholesale margins to offset purchased power costs, but also require significantly more nameplate capacity to meet capacity needs (compared to gas-fired and market capacity).

Q: What mix of resources was selected in the IRP to meet these needs?

A: As shown above, the Preferred Plan included a mix of all four resource types to meet EMW's long-term capacity and energy needs. The resource additions included in the Preferred Plan are summarized below:



This mix of resources demonstrates the balancing of EMW's capacity *and* energy needs across the 20-year planning period. Wind is primarily an energy resource with low capacity accreditation. Solar provides more accreditable capacity, but less energy than wind. Thermal resources, specifically gas-fired generators like those modeled in the IRP Preferred Plan, provide significantly more accreditable capacity, but, due to their variable fuel costs, their energy value is determined by their efficiency compared to the typical marginal gas unit (e.g., if a gas unit is more efficient than the marginal unit which is setting prices, its dispatch cost would be less than the wholesale energy price and it would receive some margin). Finally, market capacity provides lower-cost accredited capacity, but no energy. This mix of resource additions was identified as the lowest cost resource plan for EMW through the IRP process in 2021 and 2022.

Q: How does the timing of actual resource additions impact how well they fulfill energy and capacity needs?

A: As I described above, capacity needs can be more "black and white" than energy needs. Using this portfolio as an example, EMW has a clear capacity need in 2024 so resources must be procured to meet that capacity need. Ultimately, if wind projects available at that time were not comparable to what was modeled (e.g., they were more expensive or had lower capacity factors), EMW would evaluate delaying the addition and replacing the capacity with an alternative source (likely additional market capacity purchases given most other options could not be available by 2024). Importantly for the evaluation of Persimmon Creek, in the case of energy, a delay in the resource addition simply extends EMW's exposure to market prices and delays their access to the resource's energy revenue. This means that if actual project costs are higher than forecasted in the IRP and/or SPP energy prices are expected to be lower, we could delay the addition of the resource and reevaluate in a future IRP. On the other hand, if lower-cost/risk resources are available sooner, market prices are expected to be higher, and/or the capacity need is expected earlier than forecasted in the IRP (<u>all</u> of which are the case for EMW as its evaluated Persimmon Creek) a resource could be procured sooner than planned. Ultimately, the Preferred Plan is used to develop an Implementation Plan (per 20 CSR 4240-22.070(6)), but there is always flexibility to adjust actual resource procurement if it is favorable for customers on a risk-adjusted basis.

Q: How was Persimmon Creek selected as the optimal first step in meeting these needs?

A: In the 2021 IRP, the Preferred Plan included solar as the first resource addition in 2024, followed by wind in 2025 and 2026. This was updated in the 2022 IRP based on implementation activities which determined that available solar projects were less mature and had significant interconnection cost risk. This is an example of an Implementation Plan being adjusted based on market conditions.

The 2022 IRP showed some cost savings from these implementation-driven adjustments, but the primary driver was that procurement activities based on the Spring 2021 All Source Request for Proposal which continued throughout 2021 had indicated that solar projects were not available and/or significantly riskier than available wind projects. As a result, wind projects were pursued first – knowing that solar, wind, thermal, and market resources were all important to meeting energy and capacity needs in the long-term, but also knowing that wind is the most feasible near-term option. As I indicated in my Direct Testimony, the 2021 and 2022 IRPs demonstrated that the wind addition resulted in savings of $64 million compared to a resource plan with no new wind additions. Specifically adding Persimmon Creek (instead of the generic wind identified in the 2022 IRP) resulted in an additional $66 million in savings (for a total of $130M in savings identified compared to a plan with no new wind additions).

Q: Were the adjustments you mentioned to the first three years of the 2021 Preferred Plan made manually in the 2022 Annual Update or using Capacity Expansion modeling?

A: These limited adjustments in the first years (through 2025) of the plan were made manually. As mentioned above, procurement activities had indicated that available wind projects were more mature and less risky than available solar projects. As a result, the switch in near-term sequencing was based on knowledge of actual projects. This level of knowledge is not available for the longer-term resource additions that capacity expansion was used to identify. This manual switch also allowed us to identify the benefits (or detriments) to customers of this specific implementation-driven move. As I mentioned in my Direct, this change resulted in reduced costs of $4M on an NPVRR basis. This approach was only used for the first three years of the plan which were already being implemented. Beginning in 2026, capacity expansion was utilized and resulted in the solar previously identified in 2026 being switched to wind – reinforcing the energy value provided by wind relative to solar even at an assumed low level of PTC eligibility in 2026 (60%). This hybrid approach of both discrete, manual moves and capacity expansion modeling is likely to be valuable in future IRPs as well as we work to blend knowledge of more specific projects within the Implementation Plan with more general market knowledge in later time periods. Both approaches in this case demonstrated the value provided by wind.

Q: What is the relationship between the IRP assessment of new resource additions and actual resource procurement?

A: As I mentioned above, the Preferred Plan is used to develop an Implementation Plan, but the resource additions identified in the IRP are not set in stone. The long-term resource plan identified in the IRP is typically made up of "generic" resource additions which are all assumed to have the same cost, risk, and performance. This means that nuances of specific projects must be evaluated through actual resource procurement and adjustments made to the plan when identified project assessments deviate materially from what was assumed in the IRP.

Q: Why is Persimmon Creek the best available option to meet EMW's needs?

A: As described in EMW's Change in Plan Filing, Persimmon Creek not only aligned with the wind resource identified to meet EMW's capacity and energy needs in the 2022 IRP, but it was actually lower cost, lower risk, and had higher energy output than what was originally modeled. Since Persimmon Creek is already an operating asset, there is no construction risk, significantly lower capital cost and higher PTC eligibility than what was modeled in the IRP. In addition, Persimmon Creek is available to meet EMW's capacity and energy needs in 2023 – which is particularly valuable given recent increases in capacity requirements and elevated market energy prices.

Q: Can you provide an example of how Persimmon Creek will meet EMW's needs?

A: Most critically, Persimmon Creek will offer SPP margins to meet EMW's need for economic energy. Using October 2022 year-to-date as an example, Persimmon Creek has generated **[redacted]** in SPP margins. If this resource had been in EMW's portfolio this year, these margins would have reduced EMW's annual fuel and purchased power costs over the same time period by 3%. In addition, from a capacity perspective, Persimmon Creek offsets the need for approximately 20 MW of market capacity purchases. Given SPP Resource Adequacy Requirements have increased for all load-serving entities, the capacity market has become significantly tighter across the Pool. Recent capacity deals in SPP have been priced around **[redacted]**, meaning that the capacity provided by Persimmon Creek is expected to offset an estimated **[redacted]** in annual capacity costs for EMW.

Q: Please summarize this portion of your testimony.

A: While capacity and energy needs are not necessarily "binary" in that a need can be identified at a specific point in time and thus resource additions can theoretically be perfectly timed to align with those needs, the IRP is designed to determine the lowest-cost resource mix to meet both types of needs in the long-term. EMW currently has both an energy and capacity need. Meeting these needs must be done based on the most cost-effective alternatives available, factoring in the risks associated with each resource. Once a resource plan is identified through the IRP, actual resource procurement is done based on the Implementation Plan identified through the IRP, but adjustments are made if procurement activities indicate that the sequence or scale of near-term resource additions is no longer cost-effective or achievable. EMW's current Preferred Plan shows that a mix of wind, solar, and thermal (modeled as natural gas) resources are the most cost-effective way to meet EMW's capacity and energy needs over the next 20 years. Procurement activities have indicated that wind projects are the most mature option available for beginning to implement this resource plan and that they also meet EMW's energy needs more effectively than solar resources, which is particularly important in today's elevated pricing environment.

Persimmon Creek was identified through resource procurement as being lower cost, lower risk, and providing even more energy value than the wind resources identified through the IRP. EMW's change in plan filing indicated that Persimmon Creek created an additional $66 million in savings (for a total of $130M in savings identified compared to a plan with no new wind additions) due primarily to its value as a zero-marginal cost energy resource which helps offset EMW's exposure to market energy prices.

In summary, the primary objective of the IRP process is to identify resource additions and retirements which meet EMW customers' capacity and energy needs at the lowest risk-adjusted cost. This assessment identified the need for new wind primarily to meet EMW's energy need in the near- and long-term and Persimmon Creek was identified because it met that need to a more significant extent and at a lower cost than even the “generic” wind modeled in the IRP.

Q: **What has changed since Persimmon Creek was selected as the preferred resource addition?**

A: In recent years, the planning process has become increasingly dynamic as policy, technology, and macroeconomic change has accelerated. Such change can materially impact the appropriateness of a utility’s preferred plan, requiring on-going adjustments. As part of its ongoing planning process, EMW monitors for such changes and adjusts its Preferred Plan as appropriate. Given the dynamic environment in which EMW operates, Preferred Plan adjustments are becoming more common and this reinforces the value of updating the IRP annually through the Annual Update process. Within that context, I will speak to two specific, significant things have changed over the course of the last six months and highlight how we evaluated those changes in the context of adjusting (or continuing on) our plan. First, SPP has increased its Planning Reserve Margin from 12% to 15%. Second, the Inflation Reduction Act (“IRA”) was passed which dramatically changed the tax incentives available for new renewable additions.

Q: **Does the change in SPP Resource Adequacy Requirements impact EMW’s needs?**

A: Yes. The increase in the reserve margin increases EMW’s capacity need. Simplistically speaking, the increase in reserve margin of 3% equates to an additional capacity requirement of approximately 60 MW in every year going forward. Depending on final accreditation results for other EMW resources, it could also accelerate its capacity need from 2024 to 2023.

Q: Does this change impact whether Persimmon Creek is the best available resource to meet EMW's needs?

A: No, not directly but this change validates the capacity value of Persimmon Creek as an existing, operating resource. Specifically, this change only reduced the availability of alternatives from a capacity perspective and did not impact available energy options. The increase in capacity requirements across the SPP has significantly tightened the SPP capacity market – meaning that market capacity purchases are now more expensive and less available than they have been in the past. This trend will likely become even more pronounced later in the decade as coal units are retired by SPP members and SPP implements other more stringent capacity requirements, further tightening the capacity market. Given Persimmon Creek is primarily meeting an energy need, this does not significantly impact the overall need for the project, but it does increase the need slightly.

Q: Does the IRA impact EMW's needs?

A: Not directly. The significant incentives are likely to drive increased demand for renewable resources, making it more critical that EMW plan ahead in making resource decisions to avoid delays caused by supply chain and labor constraints which could ultimately result in EMW's capacity and energy needs not being met in a cost-effective and timely manner. However, this change does not directly change EMW's capacity or energy needs themselves.

Q: Will the IRA impact EMW's resource planning going forward?

A: Beginning with the 2023 Annual Update, the IRA will be factored into new resource cost assumptions. Likely this will mean that wind resources are modeled with 100% PTC eligibility if placed into service before 2035 (pending additional guidance from the Department of Treasury), with a phase out in future years, solar additions will be modeled with the same PTC eligibility (as opposed to Investment Tax Credit or "ITC"), and storage / hybrid resources will be modeled with ITC eligibility. Solar and wind were both already identified as cost-effective ways to meet EMW's capacity and energy needs so these changes will simply create additional savings (all else remaining equal) for customers on top of what has been modeled in the past.

Q: Does the IRA impact whether Persimmon Creek is the best available resource to meet EMW's needs?

A: No. As I've described previously, Persimmon Creek is primarily meeting an energy need for EMW customers. While the passage of the IRA does lower the levelized cost of energy ("LCOE") for solar resources, solar is still a more expensive energy source compared to wind. This is demonstrated below in the comparison of: 1) "Traditional ITC" solar, which was the tax incentive structure available for solar prior to the IRA's passage; 2) "PTC" Solar, which factors in the new PTC available for solar under the IRA; 3) Persimmon Creek with its existing PTC eligibility that is not impacted by the IRA.

__Levelized Cost of Energy ($/MWh, Solar Prices aligned with 2022 Evergy Capital Plan Filing)__

[redacted]

As Witness Humphrey also explained, supply chain pressures have dramatically increased the costs of recent resource procurements by other utilities. The chart below shows the indicative levelized cost of energy using the approximate blended $2,500/kW price implied in AEP's recent wind and solar procurement announcements in the same categories as the prior chart, but with an additional "Wind - PTC" item to demonstrate the LCOE of 100% PTC wind with the updated price of ~$2,500/kW.

****Levelized Cost of Energy ($/MWh, Indicative Prices based on Recent Announcement)****

[redacted]

As discussed previously, solar also provides additional capacity which is a significant source of value beyond just energy. This is why solar is expected to be a huge part of EMW's resource plan going forward. But capacity and energy needs must be balanced and wind is the best available source of low-cost energy to meet EMW's existing energy need. Beyond that, Persimmon Creek is a much better wind resource than others currently available on the market (even factoring in it only having six years of PTC eligibility), as Witness Humphrey explains in more detail.

As an alternative strategy, EMW could take a "wait and see" approach, potentially eschewing the energy value provided by wind altogether and waiting to see when a cost-effective solar resource becomes available to provide both capacity and energy, or maybe just waiting for wind prices to come back down to a level more in line with Persimmon Creek's cost. Doing so however would mean EMW customers stays dependent on the capacity and energy markets exactly as they are today and there is absolutely no guarantee that prices come back down in the future. The IRA has created significant demand and is also pushing the movement of manufacturing back "on-shore". Both of these factors will likely drive costs up in the future, not down – unless dramatic technology enhancements and supply expansion somehow offset them. The combination of this uncertainty, combined with EMW's *current* needs for both capacity and energy, make that "wait and see" approach very risky for EMW customers.

Q: Please summarize this portion of your testimony.

A: Since Persimmon Creek was selected, SPP has increased capacity requirements across the Pool and the passage of the IRA has dramatically changed the economics for different resource types. As it relates to Persimmon Creek, the increase in capacity requirements has simply made Persimmon Creek marginally more valuable given a tighter overall capacity market. However, Persimmon Creek primarily meets an energy need for EMW so this change does not dramatically impact the need for Persimmon Creek overall. The IRA, with its PTC for solar resources, has made solar a more economic resource than it was previously, but it still remains a less economic energy source than wind on an LCOE basis.

In tandem, the IRA has also driven up demand for renewables in an already constrained supply chain, likely increasing costs and construction risk of new projects. EMW's resource plan calls for future solar resources which will all benefit from the IRA. However, that does not change the fact that Persimmon Creek is available to meet EMW's energy needs *today*, with no construction risk, less performance risk, and at a cost significantly lower than any current market comparisons. Letting this low-risk, low-cost asset go and waiting for some hypothetical "better" future resource does nothing to meet EMW's current needs and provides no certainty that the hypothetical future resource will actually be "better".

Q: Are there additional sources of value from Persimmon Creek which were not factored into the IRP's assessment of the most cost-effective resource plan?

A: Yes. Although it is a qualitative consideration, Persimmon Creek provides valuable fleet diversity for EMW. Persimmon Creek would be EMW's only owned wind farm, providing wind that will remain in EMW's portfolio beyond the expiration of current Power Purchase Agreements. Additionally, Persimmon Creek is located in Oklahoma, geographically diversified from EMW's other wind resources. This not only gives it a favorable transmission location relative to EMW's load, as Witness Humphrey describes, but also gives EMW access to energy produced from a different region.

Q: Are there any additional costs, other than operations and maintenance costs, which may be incurred with Persimmon Creek which have not been captured in the purchase price of the asset?

A: There could be potential costs associated with procuring SPP firm transmission service from Persimmon Creek to EMW's load. These costs would be associated with any transmission upgrades needed to provide this firm service.

Q: How will these costs be determined?

A: EMW submits Persimmon Creek into SPP's Aggregate Study and SPP then identifies any assigned upgrade costs which EMW would need to pay in order to gain transmission service.

Q: Are these costs required for Persimmon Creek to be able to meet EMW's capacity or energy needs?

A: No. Persimmon Creek can provide both capacity and energy to EMW without firm transmission service. The benefit of firm service would be potentially higher capacity accreditation for the resource and allocated congestion hedging rights associated with the transmission path from Persimmon Creek to EMW's load. All analysis in the IRP and this CCN case assumed a conservative 10% capacity accreditation for Persimmon Creek, which is in line with the lowest level of wind capacity accreditation for resources without firm transmission service. Additionally, the congestion analysis which Witness Humphrey explains did not factor in any congestion hedging rights to offset transmission congestion costs. When EMW receives an assessment of required upgrade costs associated with firm transmission service, it would weigh the cost of those upgrades against the benefit of increased capacity accreditation and the benefit of additional congestion hedging rights. This assessment would have no impact on Persimmon Creek's ability to meet EMW's capacity and energy needs as they are outlined in this case.

Q: Does that conclude your testimony?

A: Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Evergy Missouri West, Inc. d/b/a Evergy Missouri West for Permission and Approval of a Certificate of Convenience and Necessity Authorizing It to Operate, Manage, Maintain and Control an Existing Wind Generation Facility in Oklahoma	)))))))	Case No. EA-2022-0328

AFFIDAVIT OF KAYLA MESSAMORE

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Kayla Messamore, being first duly sworn on his oath, states:

1. My name is Kayla Messamore. I work in Kansas City, Missouri, and I am employed by Evergy Metro, Inc. as Vice President Strategy and Long-Term Planning.

2. Attached hereto and made a part hereof for all purposes is my Supplemental Direct Testimony on behalf of Evergy Missouri West consisting of thirty (30) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Kayla Messamore
Kayla Messamore

Subscribed and sworn before me this 9th day of December 2022.

Anthony R. Westenkirchner
Notary Public

My commission expires: 4/26/2025

ANTHONY R. WESTENKIRCHNER
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 26, 2025
PLATTE COUNTY
COMMISSION #17279952

EVERGY MISSOURI WEST, INC.

INTEGRATED RESOURCE PLAN

NOTIFICATION OF PREFERRED RESOURCE PLAN CHANGE

SEPTEMBER 2022

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SECTION 1: 2022 ANNUAL UPDATE FILING PREFERRED RESOURCE PLAN

On June 10, 2022, Evergy Missouri West ("EMW" or "Company") submitted an annual update filing related to Chapter 22 of the Missouri Public Service Commission ("Commission") regulations concerning the Company's Electric Utility Resource Planning. The annual update filing made in Case No. EO-2022-0202 selected a Preferred Resource Plan which included 150 MW of wind additions in 2024, 72 MW of wind additions in 2026, 48 MW solar additions in 2028, 72 MW of solar additions in each of the years 2029-2035, and combustion turbines additions in 2036 and 2040. The Preferred Resource Plan also included postponing the retirement of Lake Road 4/6 to 2030, and retiring coal resources at Jeffrey 3 in 2030, and Iatan 1, Jeffrey 2, and Jeffrey 3 in 2039. Table 1 illustrates the 20-year Preferred Resource Plan that includes both generation additions and retirements as provided in the 2022 annual update filing.

Table 1: 2022 Preferred Resource Plan

Year	Wind (MW)	Solar (MW)	Thermal (MW)	Capacity Only (Annual MW)	DSM (Annual MW)	Retirements (MW)
2022					118	
2023					161	
2024	150			150	186	
2025				125	206	
2026	72			100	227	
2027				100	246	
2028		48		75	261	
2029		72		25	278	
2030		72		25	291	
2031		72		150	296	155
2032		72		125	296	
2033		72		150	297	
2034		72		150	299	
2035		72		150	300	
2036			237		302	
2037					306	
2038					309	
2039					311	
2040			237		310	246
2041					309	

SECTION 2: PREFERRED RESOURCE PLAN CHANGE

EMW's business plan or acquisition strategy has become materially inconsistent with the Preferred Resource Plan filed in the 2022 annual update filing. Therefore, pursuant to 20 CSR 4240-22.080(12), the Company is submitting this notification of the change to the annual update filing, Case No. EO-2022-0202, to the Commission and Parties. The singular change from the June 2022 Preferred Resource Plan is with respect to near-term wind resource additions; all other components including future solar additions, DSM levels, and unit retirements remain consistent with the 2022 Preferred Resource Plan.

2.1 RFP RESULTS AND ATTRACTIVE WIND ENERGY PRICING

The Company is changing its 150 MW wind additions in 2024, to a 198.6 MW wind addition in 2023. The Company has been working towards execution of the wind additions in the near-term of the Preferred Resource Plan filed in the 2022 annual update. The Company has been actively pursuing supply options, considering offers from its Request for Proposal (RFP) for wind in November 2021. The procurement team has been working through evaluating results, due diligence on projects, and continued negotiation. Various uncertainties including supply chain disruptions and commodity price volatility have contributed to fluctuations in the pricing of candidate resources and have complicated the process of procuring projects given volatility in pricing and constrained equipment availability.

The Company has identified a candidate wind resource acquisition that reduces Net Present Value Revenue Requirement (NPVRR) for EMW customers but differs from the Preferred Resource Plan filed in June 2022. The wind resource, Persimmon Creek, is comprised of 198.6 MW of nameplate capacity currently in operation and EMW is expected to commence ownership and control of the asset in January 2023, pending approval of the Company's requested Certificate of Need and Necessity ("CCN") from the Commission in Case No. EA-2022-0328. This

Persimmon Creek wind addition differs from the prior EMW Preferred Resource Plan that included a wind resource addition of 150 MW in the early 2024 timeframe.

The Company selected this wind acquisition instead of waiting an additional year to procure a wind asset because of its competitive pricing relative to other available offers. Additionally, the Company has analyzed the change, and found it to reduce revenue requirements relative to the Preferred Resource Plan filed in June 2022. The improved value for customers is due to a few factors. First, since the resource is already in operation, it receives the full value of the production tax credit (PTC), whereas the Company's IRP modeling assumption was that a new wind resource for EMW in 2024 would only receive 60% of the PTC because of its later in-service date. This full PTC benefits customers by providing additional income to reduce revenue requirements in the first six years of ownership. Second, the resource is favorably located where it has a higher capacity factor than assumed for new wind in the IRP model. Thus, it provides more zero-marginal-cost energy revenue for EMW to offset fixed costs.

This change to EMW's Preferred Plan *only* incorporates the change as a result of near-term wind acquisition. Other changes related to changes to the Southwest Power Pool's reserve margin requirement and the passage of the Inflation Recovery Act, for example, will be incorporated as a holistic update in EMW's 2023 annual update filing.

SECTION 3: CURRENT PREFERRED RESOURCE PLAN

Rule 20 CSR 4240-22.080(12) requires that the utility shall identify all changes to the superseded Preferred Resource Plan and Resource Acquisition Strategy, and provide the impact on NPVRR and all other performance measures specified in the last filing due to the new Preferred Resource Plan with respect to the superseded Preferred Resource Plan.

3.1 CHANGES TO THE PREFERRED RESOURCE PLAN

As outlined in Section 2:, the Company has made changes to the Preferred Resource Plan filed in June 2022. The revised Preferred Resource Plan is shown in Table 2 below:

Table 2: Current Preferred Resource Plan

Year	Wind (MW)	Solar (MW)	Thermal (MW)	Capacity Only (Annual MW)	DSM (Annual MW)	Retirements (MW)
2022					118	
2023	199				161	
2024				150	186	
2025				125	206	
2026	72			100	227	
2027				100	246	
2028		48		75	261	
2029		72		25	278	
2030		72			291	
2031		72		150	296	155
2032		72		125	296	
2033		72		150	297	
2034		72		150	299	
2035		72		150	300	
2036			237		302	
2037					306	
2038					309	
2039					311	
2040			237		310	246
2041					309	

3.2 CHANGES TO THE RESOURCE ACQUISITION STRATEGY

The Company has replaced the 2024 150 MW wind addition with a 198.6 MW wind resource acquisition. The schedule for implementing this acquisition strategy is shown in Table 3 below

Table 3: Wind Resource Addition Schedule

Milestone Description	Milestone Dates
Agreement Signed	August 9, 2022
Certficate of Convenience and Necessity filed	August 18, 2022
Contract close, EMW owns and operates	Early 2023

3.3 IMPACT ON NET PRESENT VALUE OF REVENUE REQUIREMENT (NPVRR)

As identified in the Evergy Missouri West Annual Update, the expected value NPVRR across the twenty-seven-endpoints for the superseded Preferred Resource Plan was $10,013 Million. The new Preferred Resource Plan has an expected value NPVRR of $9,947 Million, a $66 Million reduction. Note, the new Preferred Resource Plan is DDAAF. The previous Preferred Resource Plan was CDAAF.

Table 4: Expected Value NPVRR of Plans

Rank	Plan	NPVRR	Delta
1	DDAAF	9,947	
2	CDAAF	10,013	66
3	CCBAC	10,022	74
4	CCBAB	10,024	76
5	CCBAA	10,027	80
6	CCBAD	10,031	83
7	CDAAA	10,033	86
8	CCBAE	10,036	89
9	CBBAB	10,039	91
10	BBAAA	10,040	93
11	CBAAA	10,040	93
12	AAAAA	10,044	96
13	CDABF	10,083	135

The Company performed an analysis to address the impact of the carbon price critical uncertain factors on the revised Preferred Plan. This analysis ranks how plans perform in the high, mid, and low carbon scenarios. The results of the analysis are represented in the following tables:

Table 5: Critical Uncertain Factor – High CO_2 Prices

Rank	Plan	NPVRR	Delta
1	DDAAF	11,617	
2	CDAAF	11,734	117
3	CBBAB	11,736	119
4	CCBAB	11,740	123
5	CDABF	11,753	136
6	CDAAA	11,754	137
7	CCBAD	11,765	148
8	CCBAE	11,799	182
9	BBAAA	11,801	184
10	CBAAA	11,801	184
11	AAAAA	11,802	185
12	CCBAC	11,846	229
13	CCBAA	11,947	330

Table 6: Critical Uncertain Factor - Mid CO2 Prices

Rank	Plan	NPVRR	Delta
1	DDAAF	9,689	
2	CCBAA	9,731	42
3	CCBAC	9,740	52
4	CDAAF	9,747	58
5	CCBAB	9,758	69
6	CCBAD	9,763	74
7	CCBAE	9,764	75
8	CDAAA	9,767	78
9	BBAAA	9,769	80
10	CBAAA	9,769	80
11	AAAAA	9,773	84
12	CBBAB	9,774	85
13	CDABF	9,824	135

Table 7: Critical Uncertain Factor – Low CO_2 Prices

Rank	Plan	NPVRR	Delta
1	CCBAA	8,996	
2	CCBAC	9,042	47
3	DDAAF	9,054	58
4	CDAAF	9,090	95
5	CCBAE	9,092	96
6	BBAAA	9,093	98
7	CBAAA	9,093	98
8	AAAAA	9,098	103
9	CCBAD	9,101	105
10	CCBAB	9,104	109
11	CDAAA	9,110	115
12	CBBAB	9,133	138
13	CDABF	9,188	192

SECTION 4: SUMMARY

The revised Preferred Resource Plan outlined in Table 2 reflects the Company's decision to purchase a 198.6 MW existing wind resource which will be owned and operated by EMW in early 2023, in lieu of the planned 2024 wind addition of 150 MW.