MidAmerican Resource Evaluation Study
IEC, ELPC and Sierra Club
September 3, 2024
(PUBLIC VERSION)

RE: ELPC, IEC and Sierra Club Comments in Response to MidAmerican's August 5, 2024 Response Comments

Following the second stakeholder meeting, intervenors and Iowa Utilities Commission staff filed comments to which MidAmerican subsequently provided responses. Sierra Club, Iowa Environmental Council (IEC), and the Environmental Law and Policy Center (ELPC) (collectively, Environmental Intervenors or EI) would like to follow up on several points from MidAmerican's August 5, 2024 response to clarify the record. Specifically, our comments follow up on the issues of MidAmerican's new resource cost trajectories, new resource build limitations, and modeling of the Environmental Protection Agency's (EPA) new greenhouse gas (GHG) rule.

As the RES process has progressed, EI have noticed a pattern of MidAmerican adopting assumptions that systematically undercut the value of this planning process. The RES should produce results that are useful for both near-term and long-term planning. But right now the Company is not allowing the process to produce useful long-term results. While many of the Company's starting values or assumptions are justified in the near term, MidAmerican is using uncertainty as a justification to adopt overly conservative and unjustified assumptions over the long-term. This means that the results from later in the planning period are likely to be overly conservative and systematically wrong. MidAmerican's response is that future planning processes can correct this. But given the time required to plan some resource decisions, MidAmerican's decision to delay action will reduce its resource options and result in an RES of limited usefulness in driving future action.

I. MidAmerican Should Not Use Unreasonably High Costs for Modeling New Renewable Resources.

A. *Summary of parties' comments*

Environmental Intervenor Comments: EI expressed concern that MidAmerican is using unreasonably high costs for new solar, wind, and BESS resources. MidAmerican's resource cost assumptions for these clean energy resources are higher than any other utility forecast we have seen and higher than forecasts from the National Renewable Energy Laboratory (NREL), the United States Energy Information Administration (EIA), and Lazard. Specifically, MidAmerican assumes no downward pressure on costs due to technological learning effects for technologies

like wind, solar, and battery energy storage systems (BESS), and instead only assumes upward pressure on costs due to inflation.

Iowa Utilities Commission (IUC): IUC asks if there is a way for MidAmerican to set a decreasing price curve for storage resources.

Tech Customers: The Tech Customers noted the high cost forecast for solar, wind, and BESS resources and recommended that MidAmerican update its modeling with reasonable cost forecasts reflective of NREL's Annual Technology Baseline (ATB).

Iowa Business for Clean Energy: Iowa BCE concurred with the EI and Tech Customer comments on cost projections.

B. *MidAmerican's responses*

In response to EI's comments, MidAmerican states that, "to the extent MidAmerican has experience in developing and building resources (wind and solar), MidAmerican developed reasonable cost estimates that reflect the cost to develop and build those resources in Iowa."

MidAmerican claims that recent trends in renewable prices show an increasing trajectory.

[redacted]

C. *EI's response to MidAmerican*

MidAmerican's near-term resource cost estimates may be within the range of reasonable estimates. However, by assuming that renewable costs stay flat over time, MidAmerican has taken a position counter to industry standards. This results in MidAmerican's cost projections being as much as double other industry forecasts by 2040. MidAmerican has offered no justification for its assumption that the long-term trend of technological learning for renewables will cease permanently other than uncertainty. Assuming no change in cost because of uncertainty around how costs will change is not a neutral assumption - it is in fact a highly conservative and unreasonable assumption. MidAmerican's justification for the persistently high renewable prices in its RES for the entire study period is not supported by evidence or economics.

Furthermore, MidAmerican is arguing against updating its resource price forecast based on the RES timeline, rather than offering any evidence that its cost trajectories are reasonable. MidAmerican states that "Although resource costs may change over time, to ensure the initial resource evaluation study is completed within the allotted time, MidAmerican plans to use the cost estimates it developed at the outset for the duration of the study."

It would not take significant time for MidAmerican to update its modeling with renewable cost inputs that are consistent with costs used in resource planning processes throughout the industry. The deadline for completing the RES is over a year away. This process could start over with better input assumptions and still finish within the settlement deadline. There is no time constraint that prevents MidAmerican from working with stakeholders now on what would be a consensus recommendation for price forecasts that would be more accurate than MidAmerican locking in unreasonably high costs. At a minimum, MidAmerican could add additional sensitivities on renewable costs.

We do not dispute that prices for renewable energy have increased since 2020. The LevelTen data MidAmerican supplies shows that the pandemic and the supply chain issues that followed caused inflation in many industries, including solar. But looking at the recent trend, we can see that over the last year prices have started to stabilize and flatten out, and have even fallen in some recent quarters. This provides support for industry standard assumptions that solar and other renewable prices will soon stabilize and return to their pre-covid downward trajectories. Longer-term certainty provided by the tax incentives in the Inflation Reduction Act make wind, solar, and BESS more attractive, and will encourage expanded manufacturing, which in turn will drive down prices.

MidAmerican argues that the Company expects an increase in demand for renewables to cause a price increase that offsets the effect of technological learning. MidAmerican is correct that, in the short run, an increase in demand could cause an increase in the price of renewables. But it is unclear why the Company thinks that, over the long run, suppliers cannot adjust and expand their operations to meet the increased demand, allowing prices to fall again.

NREL has conservative, moderate, and advanced estimates to show the upper and lower bounds of the technology price forecast for all technologies. While MidAmerican claims that the existence of NREL's three "disparate" scenarios shows that "there is no industry consensus on

renewable technology cost declines due to maturation," in fact, NREL's three cost scenarios are a reasonable way to deal with the uncertainty inherent in a long-term forecast. These scenarios reflect future technological innovation with a conservative scenario reflecting today's technology with little innovation, a moderate scenario reflecting widespread adoption of today's cutting-edge technology, and an advanced scenario reflecting market success of currently unproven innovation. This recognizes that there could be different futures. Figures 1-3 show that MidAmerican's price forecasts for solar, wind, and storage are much higher than even NREL's "conservative" scenario.

Figure 1. MEC and NREL ATB Conservative, Moderate and Advanced Solar Overnight Capital Cost Comparison in Real Dollars ($/kW)

Figure 2. MEC and NREL ATB Conservative, Moderate and Advanced Wind Overnight Capital Cost Comparison in Real Dollars ($/kW)

Figure 3. MEC and NREL ATB Conservative, Moderate and Advanced Storage Overnight Capital Cost Comparison in Real Dollars ($/kW)

MidAmerican also erroneously argues in its comments that NREL's cost projections are also increasing over time. But this is based on a conflation of real and nominal dollars that is

concerning and misleading. In the 2024 NREL ATB, all costs are presented in real dollars, and the real dollar costs for wind, solar, and battery storage are projected to decline over time in all three scenarios. The NREL ATB costs in our original comments are also in real dollars, and it is often best to present these cost projections in real dollars. Real dollars remove the impacts of inflation and more accurately show cost declines due to technological forces and other factors.

Specifically, on pages 11-13 of its response, MidAmerican presents NREL ATB costs using nominal dollars instead, which include the impacts of inflation and make NREL's costs appear higher over time. MidAmerican also uses graphs with a y-axis that begins at $500 or $1,000 instead of zero, which is a common tactic to make trends look more exaggerated than they truly are. This is confusing at best, and intentionally misleading at worst. If a cost stream increases in nominal dollars, that doesn't necessarily mean its real cost is going up - it just means that the cost decline is slower than inflation. NREL's costs actually decrease in real dollars, as EI showed in its comments. And MidAmerican's cost projections, which are flat in real dollars, would be increasing over time as well on a nominal basis. Figures 4 through 9 below compare MidAmerican's and NREL's cost forecasts in nominal dollars and real dollars for solar, wind, and storage. The figures confirm that the Company's price forecast is considerably higher than NREL's.

Solar

Figure 4. MEC and NREL ATB Solar Overnight Capital Cost Comparison in Nominal Dollars ($/kW)

Figure 5. MEC and NREL ATB Solar Overnight Capital Cost Comparison in Real Dollars ($/kW)

Wind

Figure 6. MEC and NREL ATB Wind Overnight Capital Cost Comparison in Nominal Dollars ($/kW)

Figure 7. MEC and NREL ATB Wind Overnight Capital Cost Comparison in Real Dollars ($/kW)

Storage

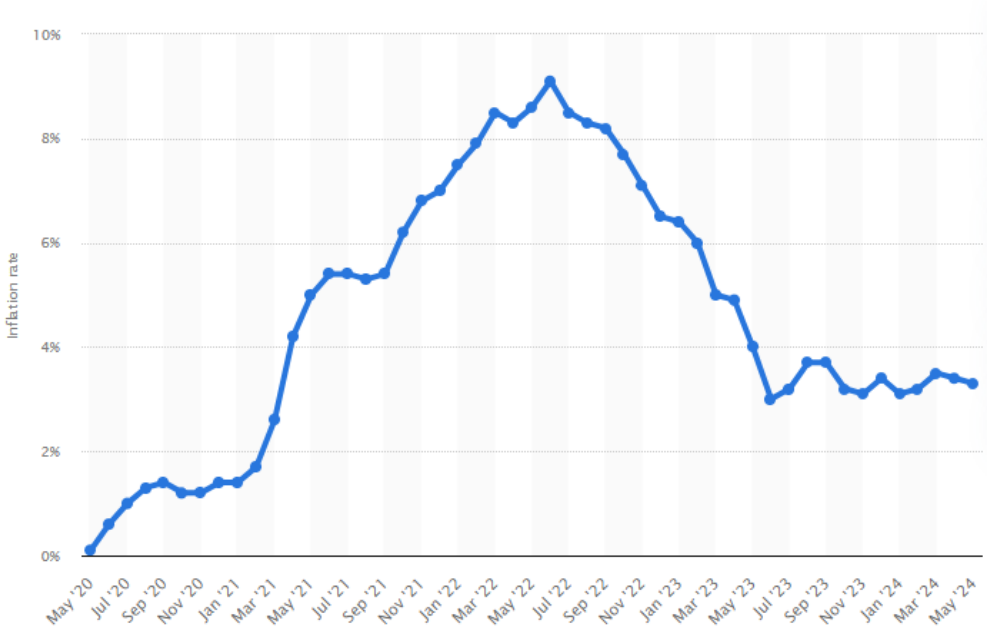
Figure 8. MEC and NREL ATB Storage Overnight Capital Cost Comparison in Nominal Dollars ($/kW)

Figure 9. MEC and NREL ATB Storage Overnight Capital Cost Comparison in Real Dollars ($/kW)

The Company also argues that NREL's costs sometimes turn out to be inaccurate, citing an NREL forecast of 2024 costs from 2018 that turned out to be too low. The Company states, "[c]learly, NREL's own forecasted cost declines have not materialized."

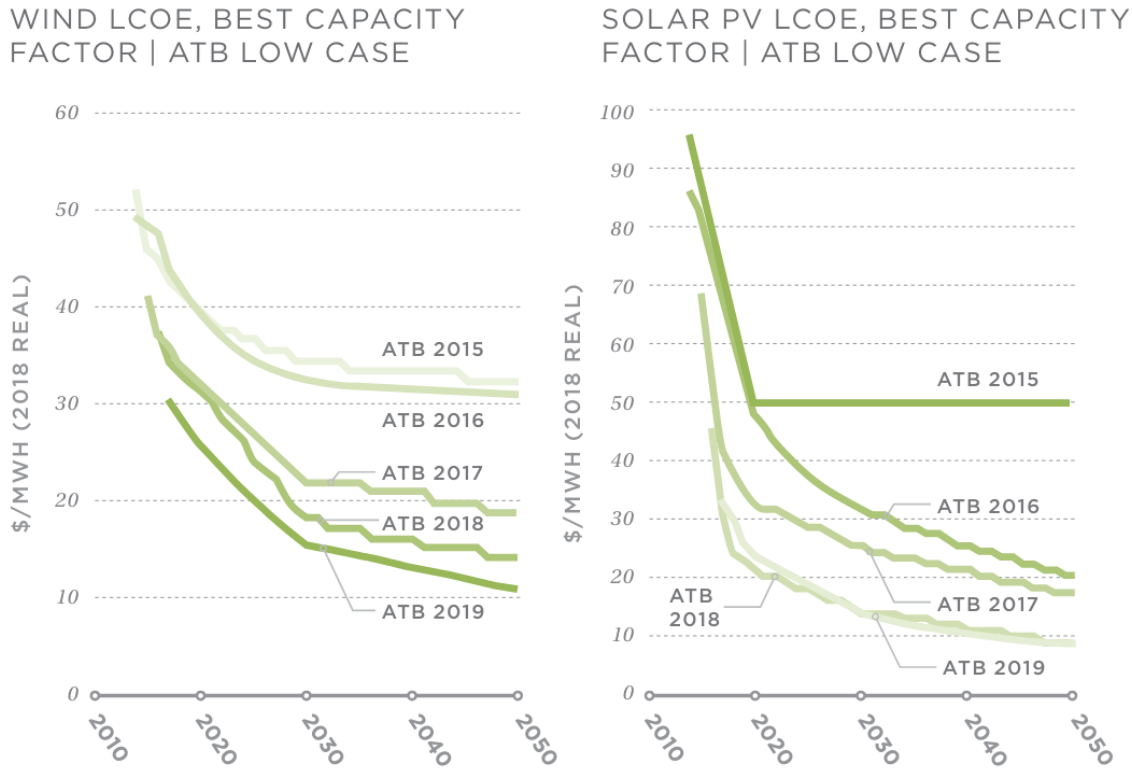
We do not dispute that costs have increased in recent years, and that recent NREL forecasts turned out to be too low. But the renewable cost increase from 2018 to 2023 was the result of a major, unforeseeable, global economic disruption that is being resolved. Today, as depicted in Figure 10 below, inflation is cooling and the Federal Reserve is working to keep inflation at about 2 percent. The price increases seen in recent years are unlikely to continue.

Figure 10. Monthly 12-month inflation rate in the US



Once the global economy recovers from the recent shock, NREL's cost forecasts may return to their previous trend of being *consistently higher than actual costs*, as shown in the chart below. Figure 11 below is a comparison of NREL ATB cost forecasts over pre-pandemic years 2015 through 2019, and it demonstrates that NREL, and others, consistently underestimate the cost declines of technology, and have to revise their forecasts further downward each year.

Figure 11. NREL ATB 2015-2019 Wind and Solar costs



II. MidAmerican Should Not Artificially Constrain the Model with a Solar Procurement Limited to [redacted] Each Year.

A. *Summary of parties' comments*

EI: In Comments on MidAmerican's June 19, 2024 Resource Evaluation Study (RES) meeting, EI argued that the [redacted] annual limit on new solar in the RES is not reasonable and biases the model toward procuring gas generation instead of clean energy. EI noted that while interconnection queues and/or supply chain issues may limit availability of some resources in the short run, these issues will likely resolve in the long run, and it is unrealistic to place such a restrictive limit on procurement of new renewables in the RES.

IUC and Tech Customers: The Iowa Utilities Commission and the Tech Customers both mentioned MISO interconnection queue timing and resource availability assumptions in comments. The Tech Customers argued that MidAmerican will need to look beyond the limited quantity of new resources in the MISO queue and consider projects with interconnection applications submitted before 2020, as well as resources located outside of the MidAmerican territory. The Tech Customers refer to "45 GWs of planned generation resources with executed GIAs that have not yet achieved commercial operation." The Commission requested more information on how interconnection queue timing is reflected in the RES planning process.

B. *MidAmerican's responses*

In response to EI's concerns about the restriction on the quantity of renewable resources available in the planning model, MidAmerican stated that gas resources also faced modeling constraints, such as no gas being available until 2028 and combined cycles not being allowed after 2034. MidAmerican also stated that "annual build limits for wind and solar were based on historical MISO interconnection queue performance." Additionally, MidAmerican stated that "local permitting issues, long development timelines, and increased concerns from area residents have become a significant factor in siting renewable projects."

To the Tech Customers, MidAmerican responded that the location of resources is outside the scope of the RES process. The Company explained that, when procuring resources, the Company will consider both projects with existing MISO interconnection agreements and projects outside of the MidAmerican territory.

C. *EI's Response to MidAmerican*

EI appreciate MidAmerican's responses to comments on renewable resource restrictions in the RES; however, EI continue to have concerns that MidAmerican's responses do not resolve. The Company's modeling has a significant bias toward selecting new gas resources over renewable resources during most of the planning timeframe. This is in part due to the renewable cost trajectories discussed above, and in part due to the restrictions placed on the quantity of new renewables. (The limit on new gas resources is [redacted] per year after 2028 while the limit is [redacted] for new solar and [redacted] for new wind.)

The restrictions that MidAmerican applies on gas do not apply during some of the most pivotal near-term years of the planning timeframe. From 2028 onward, gas CTs are available and are not subject to the same restrictive assumptions as renewables. In comparison, the restrictive renewable availability limitations continue for the duration of the 20-year planning timeframe.

But underlying MidAmerican's restrictions on new renewable builds are several unrealistic unjustified assumptions: First, as evidenced by the lack of an increase in annual resource availability in MISO, MidAmerican makes the assumption that future MISO generation cluster studies will include the same amount of renewable resources as past cluster studies. Second, MidAmerican assumes that interconnection queue timelines will not improve at any time in the next 20 years. Third, the Company assumes that permitting and siting issues will not improve in the next 20 years.

As utility and corporate clean energy goals accelerate, the amount of new renewable energy seeking interconnection is likely to increase moving forward. It is possible that MISO's first-ready, first-served interconnection queue process will be able to accommodate the increase in demand for renewables by processing more renewable energy in each cluster study.

Additionally, FERC has implemented recent changes designed to increase the speed of interconnection queue processing and the effectiveness of long-term transmission planning. For example, FERC has very recently issued Order 1920, which requires that:

- Transmission providers must perform 20-year long-term transmission planning to meet expected load growth.
- Transmission providers must consider Grid Enhancing Technologies and "right-sizing" of the transmission system to facilitate the efficient addition of transmission resources needed to serve load growth.
- Long-term transmission plans must consider building interconnection facilities that have been identified in multiple interconnection studies but have not yet been built.

Additionally, FERC Order 1977 outlines how FERC will use its backstop siting authority to site interstate transmission lines, even if a state has denied an application, if the line is sited in a national interest electric transmission corridor.

Ongoing efforts by FERC to streamline the addition of new resources should be expected to increase, over the long term, the amount of new capacity that can be added in a given year.

D. *Conclusion*

By 2043, MidAmerican expects its load to grow from [redacted] To meet that additional energy need, about [redacted] of solar would be needed. MidAmerican's reference case however only includes about [redacted] by 2043 [redacted]

In 2043, MidAmerican also plans to rely on about 10 GW of market purchases, or 20 percent of its total energy needs. This heavy reliance on market purchases is likely a result of the extremely high renewable costs and low renewable resource availability assumed in MidAmerican's modeling.

MidAmerican must resolve the issues with its resource modeling in the RES. If there is not time to re-start the modeling process completely, then the Company must include a scenario in the RES with resource cost forecasts consistent with NREL's ATB and resource availability that increases with improvements in transmission, interconnection, permitting, and siting over time.

E. *Recommendation*

MidAmerican should increase the solar availability in future years to 1000 MW per year in its RES modeling, especially after 2030.

If MidAmerican will not model more than [redacted] a year of solar in any year for the next 20 years as part of the reference case, then the RES must include a scenario with greater renewable energy availability, especially in later years. This scenario will be valuable in helping inform decision-makers about the magnitude of cost savings that could be achieved by overcoming obstacles to transmission, interconnection, siting, and permitting timelines.
Compliance with Environmental Protection Agency (EPA) greenhouse gas (GHG) rules

III. MidAmerican must consider the Environmental Protection Agency's new greenhouse gas standards in its reference case, and appropriately model the impact on coal plant retirements.

A. *Summary of parties' comments*

EI Comments: EI argued in our comments on the second RES meeting that MidAmerican must model compliance with the new GHG rule in its reference case and most other RES scenarios. MidAmerican responded that the Iowa state plan for compliance with the rule does not need to be submitted to the EPA until May 2026.

IUC Comments: IUC asked about MidAmerican's position on the treatment of EPA's carbon rule, since it is a policy shift that occurred after resource planning had already begun. MidAmerican replied that it plans to include a scenario for compliance with the EPA's GHG rule in the RES. MidAmerican notes that it can address the EPA's rule in the RES update, expected no more than three years after the filing of the RES with the IUC.

B. *EI Discussion of MidAmerican's Response*

MidAmerican is making a significant error that is likely to increase costs for ratepayers. It is not prudent utility planning to refuse to plan for compliance with a known federal rule simply because the state plan isn't due yet. Any Iowa compliance plan submitted to EPA should be informed by the best possible planning study of the economics of MidAmerican's generators. This study must take all lawful constraints on power plant emissions, including the EPA's new GHG policy, into account. If MidAmerican does not plan for compliance now, then the Iowa GHG plan will utilize uninformed and costly retirement/retrofit dates for coal and gas. Alternately, if MidAmerican selects retirement/retrofit options outside of the RES process, those options will not be informed by stakeholder review and feedback. As a result, ratepayers may be locked into a long-term plan with higher-than-necessary costs and GHG emissions.

Rather than waiting until the Iowa compliance plan is complete, MidAmerican should act now to study the most economic way to comply with the law, and then include those decisions in the state's compliance plan. Delaying doesn't decrease the likelihood that MidAmerican will have to comply, but it does decrease optionality and make it more likely that costs will be higher and options more limited than if the Company had acted sooner.

To develop a least-cost plan for compliance, MidAmerican will need to study coal and gas retirement/retrofit decisions in the context of a resource plan. The Aurora model is capable of making decisions to retrofit or retire existing plants. Failure to use this feature of the model to identify a least-cost plan for customers is not consistent with prudent utility decision making.

In its comments on the second RES meeting, IUC asked whether MidAmerican would study economic retirements in the RES. In response, MidAmerican explained that it is developing a sensitivity that considers retiring thermal generators before planned retirements. It is unclear what this sensitivity will entail, but EI continue to advocate for an endogenous economic retirement scenario as part of this process. MidAmerican also stated that there is a drawback to modeling economic retirements in Aurora, since an economic retirement model run does not

provide information about the costs of hand-selected retirement dates. This statement does not seem relevant. An economic retirement scenario is useful because it serves as a least-cost benchmark to measure how much more expensive *all other* retirement scenarios would be. It does not need to provide information about the cost of hand-selected retirement dates to be useful.

C. *Recommendation*

MidAmerican must plan to comply with all lawful regulations, including the EPA's new GHG rule, in its reference case and, most importantly, in its preferred portfolio.

We appreciate the commitment by MidAmerican to a transparent and collaborative planning process, and look forward to discussion of this feedback. Please do not hesitate to contact us with questions prior to a written response or the next stakeholder meeting.

Respectfully submitted September 3, 2024.

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