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MID AB1257 Staff Workshop Responses

Additional submitted attachment is included below.

November 25, 2014

MID Responses to California Energy Commission AB1257 Staff Workshop

The Modesto Irrigation District (MID) respectfully submits the following responses to the California Energy Commission's AB 1257 Staff Workshop and the panel on natural gas/electricity coordination. Specifically, MID would like to respond to questions number 8 and 9. Below are MID's comments:

8. **Intermittent, must-take, renewable energy sources – especially solar power – can result in net load reductions in the middle of the day when load is low and solar generation output is high. Load increases when people return home from work in the evening, and this coincides with solar generation reductions as the sun goes down. The result is a rapid ramp in energy demand, which is largely met with flexible capacity gas generation plants that can rapidly ramp to meet energy demand and can follow load to low levels without shutting down.**

    a) **What are the potential effects of this rapid ramping and load following on California's natural gas system?**

    Potentially increased natural gas demand during peak periods, possibly requiring pipeline upgrades in some areas. The biggest ramping will occur during summer peak periods when there are no building space heating requirements for gas.

    b) **Are there localized areas in California's natural gas system where quick ramping flexible capacity generation plants could pose a problem?**

    This question is more appropriate for gas utilities.

    c) **What are the effective ways to address this potential problem?**

    Site future flexible generating capacity in areas that can support the higher gas demand.

    d) **Are there localized areas, particularly where transmission is constrained, where flexible capacity generation plants can be a solution to reliability concerns even absent renewable integration issues?**

    If placed close to load, flexible capacity can offset more remote generation during peak periods, helping to reduce loading on transmission lines.

On the power side, rapid ramping and load can be an issue if utilities do not have the proper resources and utilize those resources effectively.

MID has taken several steps to address the intermittency of renewable energy resources. Our electricity users consume more than 2.5 billion kWh of electricity annually and rely on MID to maintain reasonable rates while ensuring that power is readily available.

In order to ensure that renewable energy intermittency was not an issue, MID added the Woodland 3 Generating Station. The plant uses six Wärtsilä fast-start reciprocating engines. The modular design allows the plant to operate anywhere from 4 to 49 MW without any loss in efficiency. The plant is capable of multiple starts and stops which makes it much more effective at responding to intermittency issues.

That is why the Wärtsilä units are used as a backstop for MID, helping MID maintain reliable, dependable service to our customers. This flexible and fast-starting peaking generation balances and backs up MID's green energy resources like wind and solar.

Not only have the Wärtsilä units allowed MID to maximize its usage of renewable energy, it has optimized the efficiency of our entire generation portfolio. Rather than turning to combined cycle for fast ramp needs, the combined cycle plants are scheduled and operate more efficiently. These efficiencies have led to less natural gas usage while maintaining clean air standards and service to customers.

9. Flexible capacity gas generation facilities are typically less efficient than conventional combined cycle generation. Will more frequent use of flexible capacity actually contribute to increased use of natural gas as a generation fuel overall for California? What would increased use of flexible capacity mean for particulate emissions, NOx and GHG emissions? Will flexible capacity generation facilities need to modify their permits for increased start and stop operations? Are there market signals or factors that would mitigate using these less efficient facilities?

> *For MID there is an overall emission benefit to running the Wärtsilä units. Their operation either offsets the use of simple-cycle turbines which have a significantly higher heat rate, or provide load-following capability that would otherwise be provided by our combined-cycle plant; in this case the part-load heat rate of the Wärtsilä units is generally equal to or better than the part-load heat rate of the combined-cycle unit.*

Can California's natural gas system handle increases in gas demand for electricity generation and are there changes needed in how the gas and electricity systems coordinate in California?

> *This question is more appropriate for gas utilities.*

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As stated earlier, flexible capacity gas generation facilities, when used appropriately, can actually reduce overall emissions and natural gas usage. Conventional combined cycle generation is not designed for cyclic operations. The starts, stops and running at less than optimal speed make the combined cycle plants less efficient and reliable.

Flexible capacity does not replace combined cycle generation; it works in concert, allowing the entire system to operate reliably and cost effectively. Flexible capacity, when used appropriately, can increase fleet efficiency and reduce overall gas consumption and carbon dioxide emissions by absorbing net load fluctuations in a more efficient manner. This allows combined cycle plants to run at a higher capacity factor, at higher loads and at maximum efficiency, and with fewer costly starts/stops.

As California continues to add renewables to utility portfolios, the state must ensure that the utilities have all of the tools available to address the resulting intermittency.

Respectfully Submitted,

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