The Economic Case for Retiring North Valmy Generating Station

An Analysis by Synapse Energy Economics

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Valmy: Nevada's largest coal plant and largest carbon polluter

- Located between Winnemucca and Battle Mountain
- In 2014, emitted 2,635,215 metric tons of carbon dioxide, making it the state's largest greenhouse gas emitter
- Major source of sulfur dioxide, oxides of nitrogen, and mercury pollution
- Built in the 1980s, Valmy lacks many basic pollution controls
- No controls at all on carbon dioxide, the main source of climate pollution

Valmy currently supplies up to one-quarter of Northern NV's electricity

- Peak generating capacity is 522 MW
- Half of the plant is owned by Idaho Power and about half its power goes to Idaho
- Previously operated at much higher capacity
- Currently both boilers are scheduled to retire in 2025
- Various analyses indicate the plant must close by then to ensure Nevada complies with the Clean Power Plan

Synapse Energy Economics analyzed the current and prospective economics of Valmy—key findings:

- NV Energy previously sought 2021/2015 retirement
- Idaho Power showed earlier retirement was lower cost
- No true barriers to early retirement: Valmy is not needed for reliability; recovering “sunk costs” not a reason to keep the plant open
- Economics are worsening and risks increasing: low natural gas prices, likely additional environmental upgrades, less expensive alternatives including solar

NV Energy previously proposed earlier retirement

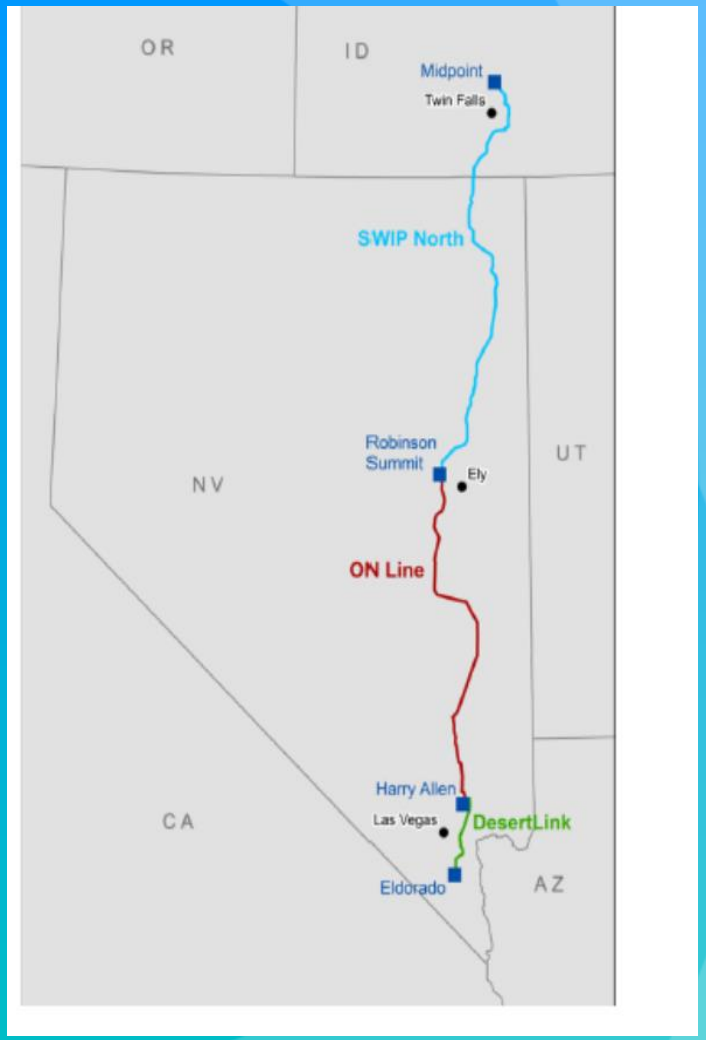
- In 2013, PUCN staff raised concerns about increased costs from running only one of two units for four years; Commission moved unit 1 retirement date to 2025
- Since then, Valmy economics have continued to deteriorate; gas remains low and solar/wind becoming competitive
- Another rationale for Valmy, fuel diversity, is no longer relevant due to Clean Power Plan compliance necessity
- Economic analysis suggests at minimum, advancing one unit's retirement to 2019; an updated economic analysis may indicate moving both units' retirement to 2019 advantageous

Idaho Power showed early retirement was lowest cost

- In 2013 filing with Oregon PUC, IP acknowledged if additional controls (such as for sulfur dioxide) were required, it would not be economic to operate beyond 2018
- IP's 2015 IRP modeling evaluated 23 portfolios assuming Clean Power Plan compliance; under every one of these the 2019/2025 portfolio was the lowest cost of all tested
- IP also subjected each of these portfolios to variations in gas prices, customer load and hydro power; of 100 variations 2019/2025 portfolio was the least-cost for all 100 tested

No true barrier to retirement: Valmy not needed for reliability

- Nevada reliability: Significantly more transmission has come online (One Nevada Line); SWIP north projected for 2021
- Idaho reliability: either of two planned transmission lines (Gateway West or Boardman to Hemingway) ensures capacity
- WECC assumed 2021/2025 Valmy retirement in 2015 assessment

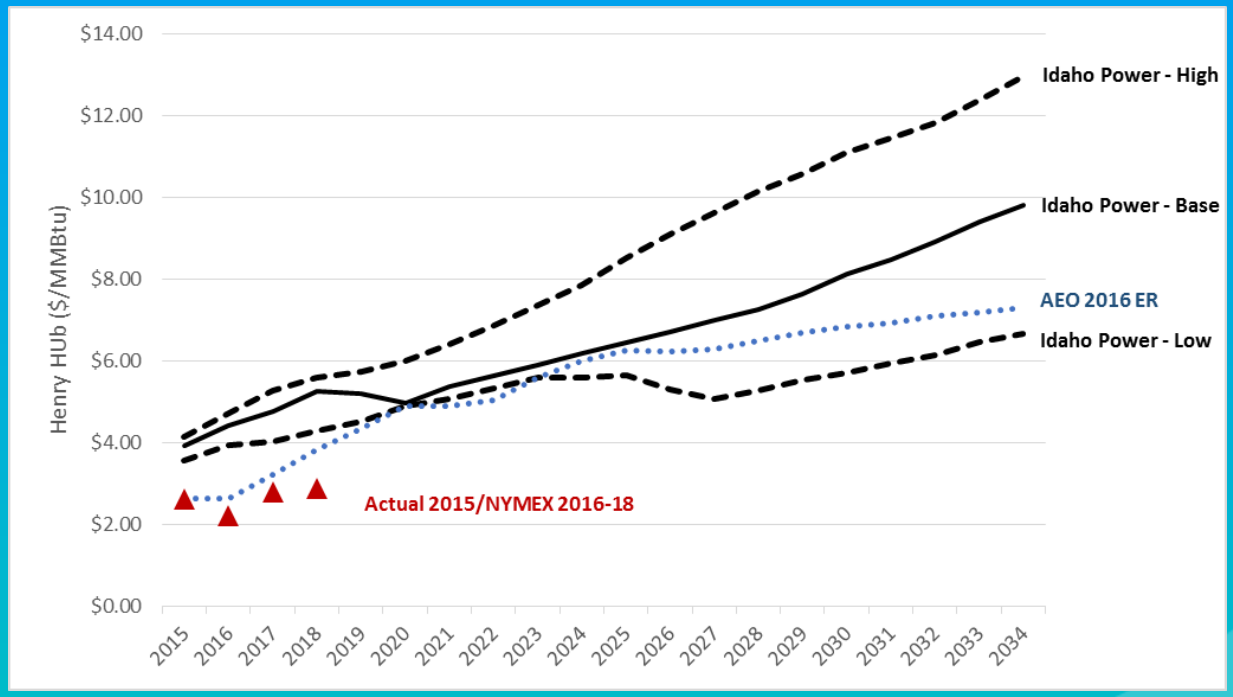


No true barrier to retirement: the “sunk costs” fallacy

- It is not necessary to recover all costs prior to retirement; this could cost ratepayers more over the long run
- Utility Commissions can permit collecting depreciation expenses over extended period
- Allows the utility to collect existing plant balance and minimizes impact to ratepayers

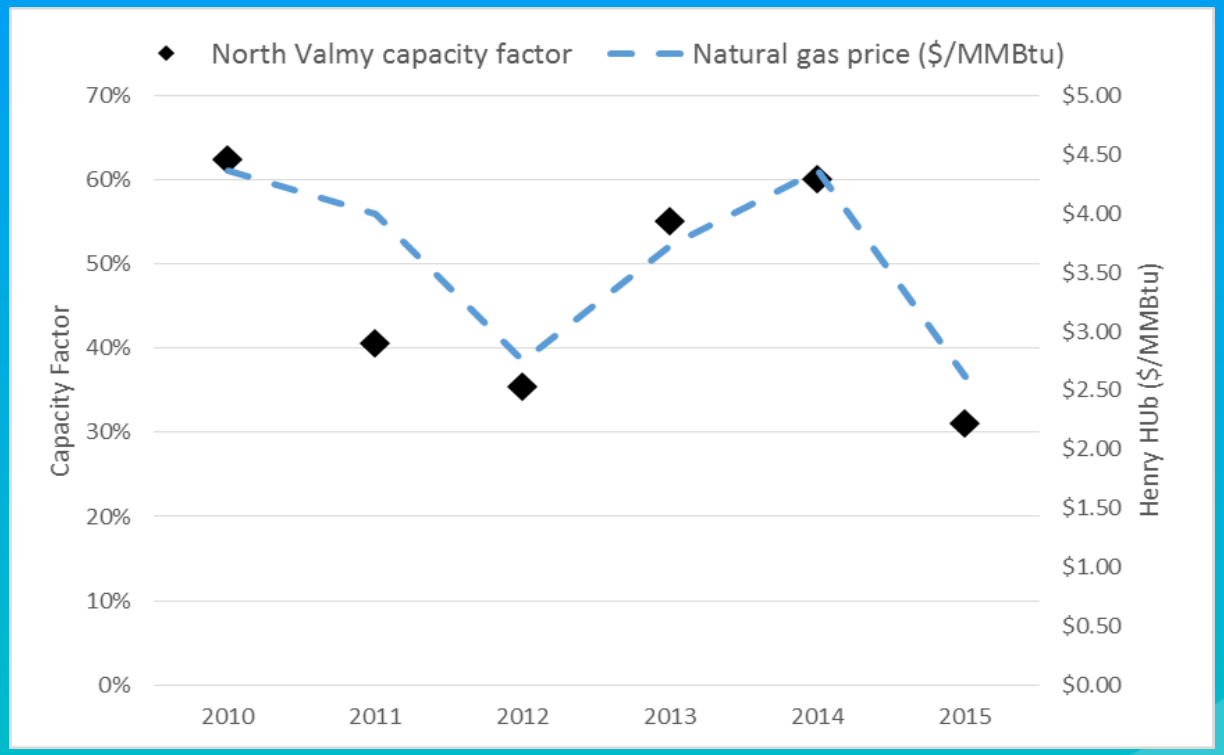
The economics of Valmy are worsening and risks are increasing

- Since IP's and NVE's most recent evaluations of Valmy, natural gas prices have dropped—IP estimated $4 per MMBtu, but actual 2015 average price was $2.63 MMBtu. Even the company's Low Case was considerably higher than actual.



Valmy usage in recent years directly corresponds to price of natural gas

- Valmy's capacity factor in 2015 was 31%--about half of 2014's. It is unlikely that the plant is recovering all its fixed and capital costs.



Early retirement avoids costly environmental compliance

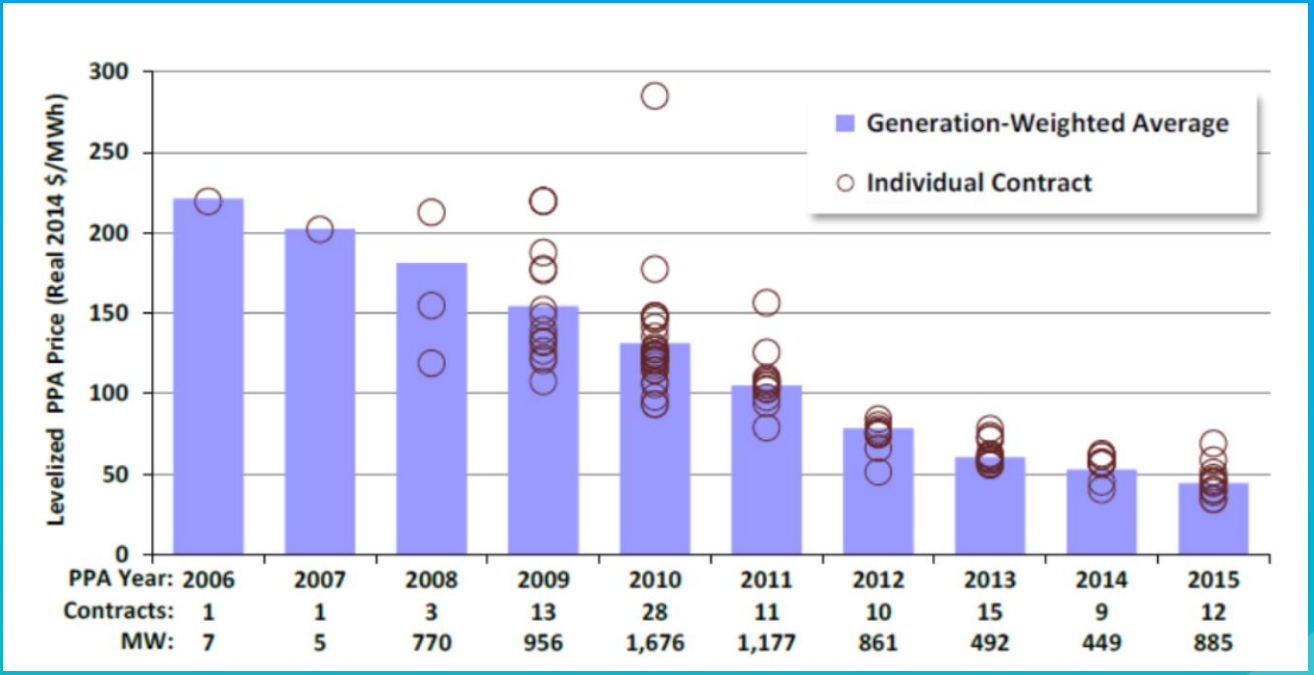
- Under a 2015 consent decree EPA must designate as nonattainment sources emitting more than 2,600 tons of SO2 and with an emission rate greater than 0.45 lbs/MMBtu.
- In 2012, Valmy emitted over 3,600 tons of S02 at a rate of 0.4515 lbs/MMBtu. Emissions have increased and rates worsened in subsequent years.
- Although EPA has not yet designated Valmy, it is likely Unit 1 will be required to install FGD before 2021.
- This upgrade is estimated to cost about $171 million—making the plant even less economic.

Other options are less expensive

- According to IP, Valmy's recent variable operating cost is more than $47 per MWh.
- With existing fixed costs and ongoing capital, the "all-in" cost of the plant is likely more than $56 per MWh.
- At recent natural gas prices, an efficient CC gas plant operates in the range of $20 to $25 per MWh.
- With recent extension of the PTC and ITC, benefiting wind and solar, costs of some wind and solar projects are on par with natural gas, according to Lazard's Levelized Cost of Energy Analysis—2015.

Solar costs are rapidly declining

- As shown on this chart from LBNL, the levelized costs of solar PV PPAs are on par with the costs of Valmy, without considering its possible environmental retrofit costs.
- NVE signed two PPAs recently, starting at $46 and $39/MWh.



Conclusions

- Arguments for Valmy related to reliability, fuel diversity, or uncertainty regarding IP's plans are largely red herrings
- Transmission investments online or planned are providing more reliability and renewable energy development
- Valmy is becoming increasingly uneconomic; a firm commitment to close the plant by NVE and IP will reduce risks to ratepayers, speed CPP compliance, and increase certainty
- Replacement with 100% renewable energy is cost-competitive and provides Nevada economic development and jobs

Synapse Energy Economics is a research and consulting firm specializing in energy, economic, and environmental topics. Since its inception in 1996, Synapse has grown to become a leader in providing rigorous analysis of the electric power sector for public interest and governmental clients in 31 states.

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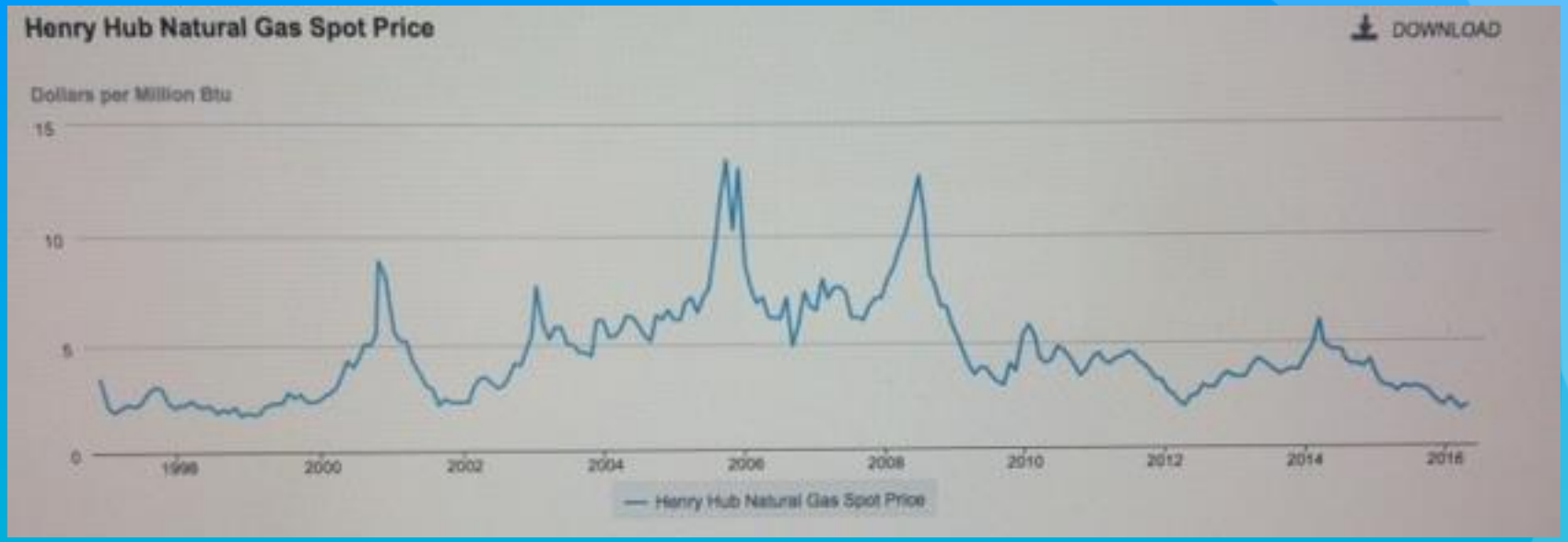
Natural gas price volatility



Source: US Energy Information Agency