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NV Energy plan would impose big, new hidden costs on ratepayers

'Fuel switch' plan resembles a 'bait-and-fuel-switch'

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Introduction

NV Energy wants to replace existing power plants before their usefulness has ended and for consumers to not only pay for the new plants, but also to pay more in perpetuity.

A version of the plan, dubbed "NVision" by the utility's public relations team, was first proposed to the state Public Utility Commission in 2012. When the PUC rejected the proposal, the company took it to Sen. Kelvin Atkinson and Assemblyman David Bobzien, who introduced it in the Nevada Legislature's current session as Senate Bill 123.[1]

If enacted, NV Energy's legislation would require the firm to close down at least 800 megawatts (MW) of coal-fired electric generation capacity before the standard decommissioning date — after having constructed new renewable and natural-gas-fired power plants to replace that lost capacity.

Electric ratepayers in Nevada should find the plan alarming, since a component of the rate structure would reimburse NV Energy for the construction costs associated with building new power plants.

In other words, ratepayers would not only have to reimburse NV Energy for the costs of constructing the new renewable and natural-gas-fired power plants, but they would also be on the hook for all un-depreciated and decommissioning costs for the coal-fired plants that NV Energy now wants to close prematurely. The utility even wants to be compensated for the stockpiles of coal it has purchased, but no longer wants to use.

Senate Bill 123 also proposes to remove many of the utility's decisions about replacing its coal-fired power plants from the regulatory oversight of the Nevada Public Utilities Commission. Language from the first reprint of the bill states that the "Commission *shall accept* any element" of a capacity replacement plan that is consistent with the legislation, regardless of its potential impact on rates or reliability of service.

Such automatic deference to the state's electric monopoly puts ratepayers at substantial additional risk. While electricity produced from both coal and natural gas is currently inexpensive in comparison to electricity produced through other means, fuel prices for natural gas are much more volatile than for coal.

The U.S. Department of Energy predicts that natural-gas prices could more than double by 2040, growing from the 2013 opening price of $3.25 per million British

Thermal Units (BTU) to $7.83.[2] Over the same time period, coal prices are only projected to increase from $2.13 to $3.08 per million BTUs.[3] Since power plants typically have a 30- to 40-year life cycle, both long-term cost growth and short-term volatility have been valid concerns of regulators.

Because the NVision plan would push aside these cost concerns, it has prompted sharp criticism from both the Nevada Public Utilities Commission[4] and the state's consumer advocate.[5]

Price changes in natural gas could drastically change forecast scenarios

NV Energy is not the first electric utility to propose a plan similar to NVision. In 2010, lawmakers in Colorado passed HB 1365,[6] which allowed utilities in that state to close 900 MW of coal-fired generating capacity ahead of schedule and construct replacement natural-gas-fired power plants, while forcing ratepayers to cover the cost of the fuel switch. At the time, Colorado's primary utility provider, Xcel Energy, estimated that the plan would cost about $1 billion over seven years and cause electricity rates to rise about 2 percent faster by 2020.[7]

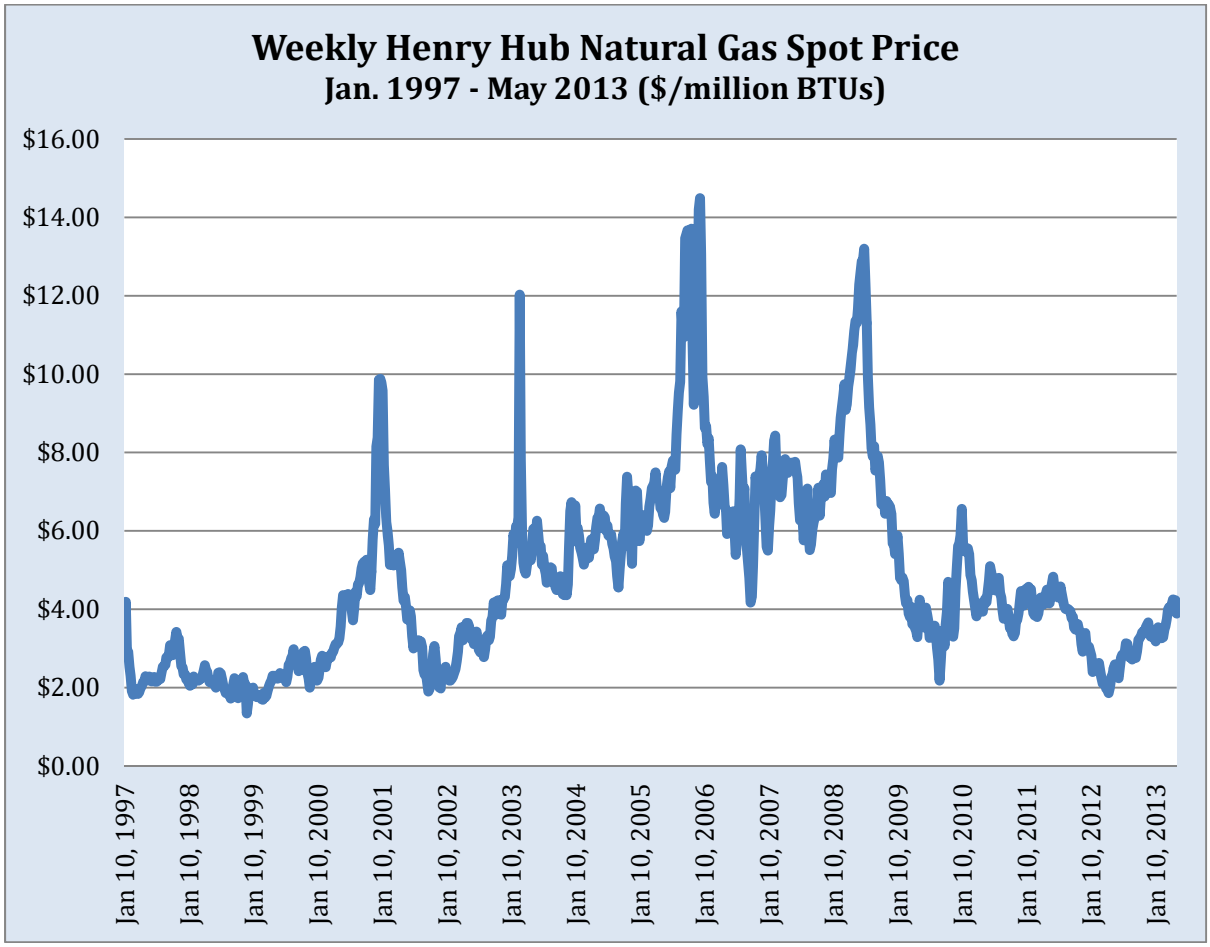
The Colorado Public Utilities Commission contracted with a group of economists at Colorado State University to model the economic impact of Xcel's projected rate increase. They estimated that even this slight increase in electricity prices would cause total household income to fall by $86 million as individuals had less disposable income and businesses absorbed the additional production costs. They further estimated that state and local tax revenues would decline by $2.03 million and that 833 jobs would be destroyed, on net, by the higher energy costs.[8]

NV Energy now estimates a similar rate increase as a result of SB 123. Company projections show that NVision would cause rates to rise 2.59 percent faster over a 10-year period.[9]

However, it is likely that the rate projections offered by Xcel and NV Energy are dramatically understated because they have not adequately accounted for the long-term growth and short-term volatility problems associated with natural-gas prices.

Data from the U.S. Department of Energy's Energy Information Administration shows that natural-gas prices have been extremely volatile in recent decades, reaching highs above $14 per million BTUs and subsequently falling as low as $2 per million BTUs. In fact, between just January 2013 and May 2013, the natural-gas spot price has climbed by about one dollar per million BTUs. [10]

NV Energy has not made the assumptions underlying its calculations publicly available, but if the utility has calculated based on current natural-gas prices, which hover around $4.15 per million BTUs, then it is already significantly understating the risk that NVision poses to ratepayers.



Source: U.S. Department of Energy, Energy Information Administration

The extreme volatility of natural-gas prices could force rates much higher because NV Energy is allowed to adjust rates upward, on a quarterly basis, to recover those higher fuel costs from ratepayers. This adjustment occurs *outside* of the utility's general rate-regulations cases and is known as a "fuel cost" adjustment.

Thus, projections from the utility that only show increases in *general* rates from the NVision proposal will fail to capture the *total* impact on the rates Nevadans may pay if the proposal is adopted. This reality is particularly relevant, given the volatility of natural-gas fuel prices and the large proportion of total generation costs that fuels constitute.

Doesn't SB 123 include a control on rate hikes?

Section 11 of SB 123 sets a limit on the rate increases that NV Energy can seek to recover from the construction costs of replacement power plants: 5 percent. However, this rate cap is only relevant to the facility construction costs that are included in *general* rate hearings. NV Energy can still increase rates beyond this

amount, on a quarterly basis, through a fuel-cost adjustment. This means that *total* rate hikes due to NVision are likely to be significantly higher than 5 percent.

Cost projections under alternative scenarios of natural-gas prices

While volatility makes it difficult to predict future prices for natural gas, it is possible to compare the all-in, or total, costs of electricity production from natural gas at different price levels with the all-in costs of electricity produced through other means.

To do so, energy economists tabulate all costs related to electricity production, which include: construction costs, maintenance and operations costs, fuel costs and decommissioning costs.

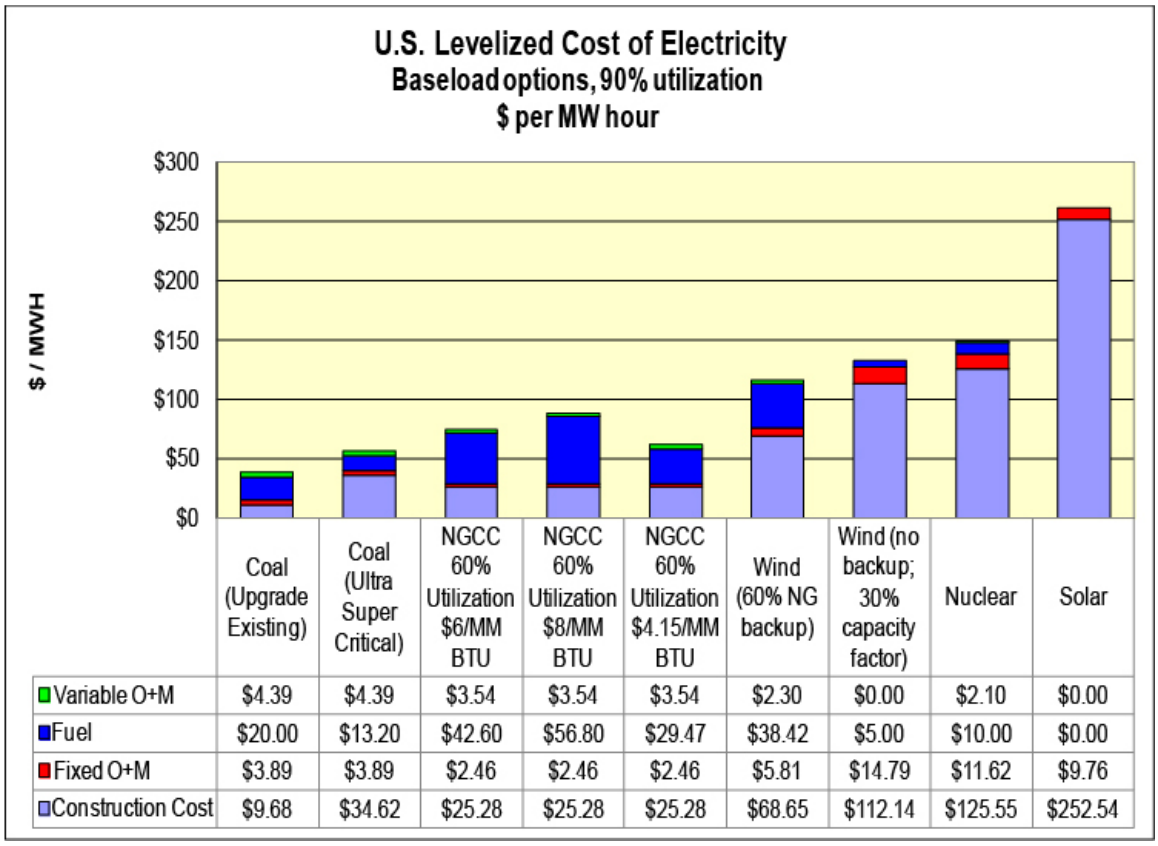
These factors are weighed against the asset life of the power plant and the plant's capacity factor (the proportion of actual production over time to the maximum production level that is theoretically possible) in order to calculate a levelized cost of energy production. This levelized[11] cost — expressed as a dollar figure per unit of electricity — allows economists to compare the relative cost-efficiency of different power plants.

This analysis uses industry averages provided by the Energy Information Administration to calculate the levelized cost of electricity production from coal-fired, nuclear, wind and solar power plants. These are then compared to the levelized cost of electricity from natural-gas-fired power plants under a variety of assumptions. Unsurprisingly, it shows that when fuel prices are low for natural gas, natural-gas-fired power plants look competitive with coal-fired power plants. But when those prices rise, electricity from natural-gas-fired power plants becomes comparatively expensive.

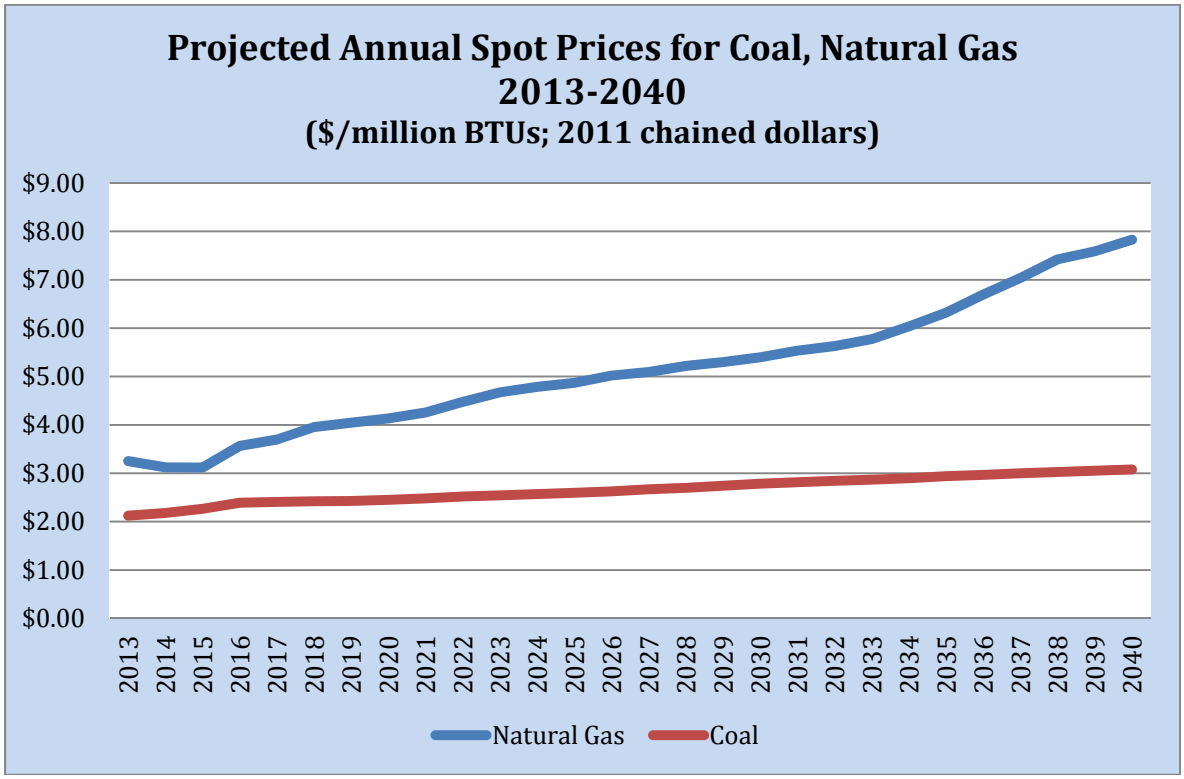
At the current spot price of $4.15 per million BTUs for natural gas, the levelized cost of electricity is $60.74 per megawatt-hour, or 6.07 cents per kilowatt-hour (kWh). The levelized cost for new coal plants, by comparison, is 5.61 cents per kWh. However, if the price of natural gas rises to just $6 per million BTUs, then its levelized cost climbs to 7.39 cents per kWh. At $8 per million BTUs, the levelized cost of natural gas is 8.81 cents per kWh.

While the levelized cost of electricity from other non-coal resources remains substantially higher than for natural gas — even at $8 per million BTUs — it is clear that the incremental costs of switching from coal to natural gas escalate quickly as the price of natural gas rises.

This is not only important in the context of short-term price volatility. Estimates from the Energy Information Administration also project that the price of natural gas will rise more quickly than the price of coal over the next several decades.



	Coal (Upgrade Existing)	Coal (Ultra Super Critical)	NGCC 60% Utilization $6/MM BTU	NGCC 60% Utilization $8/MM BTU	NGCC 60% Utilization $4.15/MM BTU	Wind (60% NG backup)	Wind (no backup; 30% capacity factor)	Nuclear	Solar
Variable O+M	$4.39	$4.39	$3.54	$3.54	$3.54	$2.30	$0.00	$2.10	$0.00
Fuel	$20.00	$13.20	$42.60	$56.80	$29.47	$38.42	$5.00	$10.00	$0.00
Fixed O+M	$3.89	$3.89	$2.46	$2.46	$2.46	$5.81	$14.79	$11.62	$9.76
Construction Cost	$9.68	$34.62	$25.28	$25.28	$25.28	$68.65	$112.14	$125.55	$252.54



Source: U.S. Department of Energy, Energy Information Administration

As a result, the incremental costs of replacing existing coal capacity with natural gas should be expected to increase over time. NV Energy, under SB 123, would be able to recoup this growing cost from ratepayers through quarterly fuel-cost rate adjustments.

What about renewables?

The first reprint of SB 123 requires NV Energy to replace at least 800 MW of coal capacity with at least 700 MW of natural gas capacity and at least 600 MW of renewable capacity. Pending amendments to the bill, however, would reduce those replacement specifications to 550 MW of new natural gas and 350 MW of renewable generation.

As the levelized cost analysis presented here shows, however, the cost of new wind or solar generation is not only far in excess of coal-fired generation, it is also far in excess of natural-gas-fired generation even at the high fuel price of $8 per million BTUs.

It appears from the bill's current language that NV Energy will be unable to recoup the additional costs of constructing renewable facilities beyond the 5 percent limitation on rate hikes. However, even this appearance is misleading.

First, if NV Energy elects to meet the requirement by constructing wind turbines with natural gas as a back-up generation source to protect against variability in wind production levels, it can still recoup additional fuel costs for natural gas through the fuel-cost adjustment process.

Second, to the extent NV Energy uses new renewable capacity to satisfy the requirements of the state's Renewable Portfolio Standard, the utility can incorporate all of those additional costs into the rate structure and SB 123's rate-hike cap would have no effect.

Why do proponents support NVision?

The biggest proponent of this scheme, NV Energy, stands to benefit for the most obvious reason: It will rake in more money.

As a regulated monopoly, NV Energy is guaranteed a return on equity of 10.5 percent. It is from this return on equity that NV Energy's shareholders derive their profits.

This regulatory structure gives NV Energy and similarly regulated utilities a perverse incentive: It financially rewards them if they can get state lawmakers to impose on them *more costly and inefficient* production methods.

The math is simple: If the utility is required to produce through more *costly* means and shareholder profits are guaranteed as a percentage of those *costs*, then shareholders make more money by producing *less* efficiently. Ratepayers — facing a private, yet government-enforced monopoly — have no choice among providers and so are effectively forced to pay the higher rates that result.

This recognition is why Nevada and most other states require utilities to receive permission from a public utilities commission — where they are opposed by a state-funded consumer advocate — before the monopolies are permitted to take almost any action. The traditional role of the utilities commission, in this sense, is to ensure the utility is financially viable while also protecting consumers against the excesses of monopolistic privilege.

(A few states, led by Texas, have taken a decidedly more free-market approach in recent decades by allowing for open competition on the retail electricity market. In Texas, retail providers compete on the wholesale market to sign power-purchase agreements with renewable and conventional generation facilities and work to establish a reputation for cost-control and reliability. Customers are able to shop freely among these retail providers through a portal on the Texas Public Utility Commission's website on the basis of price, term of contract and renewable content offered by each provider.[12] Not coincidentally, Texans today face retail prices 17.5 percent lower than they did in 2002[13] — while retail prices in Nevada rose 31.1 percent over the same period.[14])

However, a key objection to NVision from the attorney general's Bureau of Consumer Protection — the state's consumer advocate — is that the plan would allow NV Energy to replace the power purchase agreements it holds with many independent power producers with newly constructed facilities *owned directly* by NV Energy.

Significantly, ratepayers aren't obliged to provide a return on equity for power that NV Energy purchases on the wholesale market. They are, however, obliged to do so for facilities that are owned directly by the utility.[15]

How will Nevada households be impacted by NVision?

The NVision plan will increase Nevada's retail-electricity prices. While NV Energy admits this explicitly, the utility's projection of a 2.59 percent increase is most likely dramatically understated. That is because of the long-term rise and short-term volatility associated with natural-gas prices.

Bezdek and Wendling (2011) modeled the economic impact of Colorado's fuel-switch legislation and concluded that electricity prices would rise between 11 and 50 percent once all costs were included. They estimated that Colorado ratepayers would pay between $5 billion and $22 billion more, cumulatively, over the 2011-

2020 period as a result of the legislation and that this would result in net loss of between 280,000 and 1,180,000 jobs.[16]

Whatever the actual rate hike may be, policymakers should recognize that policies that raise electric rates have the impact of a tax on electricity consumption. Electricity is a key input into nearly every productive process. Consequently, this tax, if passed, will raise the cost of business, leading to a loss of economic output. Households will also be left with less disposable income, as a greater share of income will go toward power bills. This means that individuals will spend less on other goods and services, causing decline in business revenue.

A number of studies have tried to quantify the impact of higher energy prices on economic output. Rose and Wei (2006) find that for every 1 percent rise in energy prices, overall economic output shrinks by 0.1 percent.[17] Blumel, Espinoza and Domper (2009) find an even stronger relationship, estimating that a 1 percent increase in energy prices results in a 0.16 to 0.85 percent decline in economic output.[18] Bezdek and Wendling (2011) review 55 econometric studies that examine the impact of energy and electricity prices on economic output and find that every one concludes higher energy prices result in lost economic output, albeit to varying degrees.[19]

Thus, Nevadans can expect NVision — if passed by the Nevada Legislature and signed by Gov. Brian Sandoval — to reduce economic output. The most acute impact will be experienced by low-income families and energy-intensive industries in Nevada. Those industries include casinos and electronic data centers that will face substantially higher energy costs, which will limit their competitiveness.

Studies have also shown that higher energy costs have a highly regressive impact, since energy expenditures consume a higher proportion of income for low-income individuals and families.

Trisko (2013) compiled data from the Energy Information Administration, U.S. Census Bureau and the Congressional Budget Office to examine the impact of rising energy prices on Nevada households in different income brackets. He finds that households earning less than $10,000 annually pay an average of $3,509 annually in energy costs, consuming an average of 57 percent of the household budget. As energy costs have risen, this spending has displaced spending on other necessities, including food, clothing and housing. For households earning more than $50,000 annually, energy costs account for only 8 percent of household spending.[20]

Estimated Nevada household energy costs by income category (Trisko, 2013)					
Pre-tax annual income	***<$10k***	***$10k-$30k***	***$30k-$50k***	***>$50k***	***Total***
Pct. of total households	7.1%	22.2%	21.6%	49.2%	100.0%
Est. avg. after-tax income	$6,157	$19,280	$35,624	$85,479	$57,177
Residential Energy cost	$1,449	$1,524	$1,733	$2,275	$1,933
Electric	$1,120	$1,158	$1,344	$1,724	$1,473
Natural Gas	$255	$284	$302	$427	$357
Other	$74	$82	$87	$123	$103
Gasoline	$2,060	$2,425	$3,376	$4,713	$3,730
Total Energy	$3,509	$3,950	$5,109	$6,988	$5,663
Energy % of after-tax income	**57%**	**20%**	**14%**	**8%**	**10%**

Hence, further rate increases due to SB 123 or other pending legislation, including SB 252,[21] will harm those at the lower end of the income scale most acutely.

Conclusion

NVision, as proposed in SB 123, would increase electricity prices. NV Energy's estimates of the expected rate hikes most likely under-report the extent of those rate increases, due to the short-term volatility and long-term increases in natural gas prices. Further, the utility reports only the expected increase in *general* rates even though prices should be expected to rise far more through quarterly fuel-cost adjustments which occur outside of the general rate-case hearings.

While NV Energy shareholders would use the utility's monopoly power to reap higher profits through NVision, ratepayers would be forced to bear significantly higher electricity prices — depressing state economic growth and having a sharply regressive impact on Nevada households. Independent estimates of similar legislation in Colorado show that rates could rise between 11 and 50 percent, based on differing assumptions.

For such reasons, Nevada state regulators and consumer advocates have clamored against the proposal, stating that it unduly benefits NV Energy while harming electric consumers. And, indeed, the evidence shows that NV Energy's fuel-switch plan, as currently configured, is a well-optimized rent-seeking scheme.

Given its hidden costs and risks, wags — with reason — are referring to the proposal as a "bait-and-fuel-switch" offering.

It is one more piece of evidence that Nevada needs to abandon its "your political daddy knows best" approach to energy policy and allow ratepayers the benefits of more freedom in energy markets.

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[1] Nevada Legislature, 77th Session, Senate Bill 123, http://www.leg.state.nv.us/Session/77th2013/Reports/history.cfm?ID=321.
[2] U.S. Department of Energy, Energy Information Administration, "Natural Gas Spot and Futures Prices (NYMEX)," Henry Hub Spot Prices, http://www.eia.gov/dnav/ng/ng_pri_fut_s1_w.htm.
[3] U.S. Department of Energy, Energy Information Administration, "Coal Supply, Disposition, and Prices," http://www.eia.gov/coal/.
[4] See, e.g. Andrew Doughman, "Nine problems regulators have with NV Energy's coal-ditching plan," *Las Vegas Sun*, April 30, 2013, http://www.lasvegassun.com/news/2013/apr/30/nine-problems-regulators-have-nv-energys-coal-plan/#axzz2Tu9tQtX0.
[5] Andrew Doughman, "Consumer watchdog: NV Energy plan will drive up rates, guarantee profits," *Las Vegas Sun*, April 3, 2013, http://www.lasvegassun.com/news/2013/apr/03/consumer-watchdog-nv-energy-plan-will-drive-rates-/#axzz2Tu9tQtX0.
[6] Colorado Legislature, 2010 Session, House Bill 10-1365, http://www.leg.state.co.us/CLICS/CLICS2010A/csl.nsf/fsbillcont3/0CA296732C8CEF4D872576E400641B74?Open&file=1365_enr.pdf.
[7] Xcel Energy, "Clean Air-Clean Jobs Act Emissions Reduction Plan," CPUC Docket No. 10M-245E, August 2010, https://www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=65813&p_session_id.
[8] Harvey Cutler et al., "Analyzing the Economic Impacts of House Bill HB10-1365," Colorado State University, Prepared for Colorado Public Utilities Commission, September 2010.
[9] Rate impact exhibit distributed by NV Energy at Nevada Legislature, May 9, 2013.
[10] *Op cit.,* Energy Information Administration, note 3.
[11] "Levelized Energy Cost (LEC, also known as Levelised Cost of Energy, abbreviated as LCOE[5]) is the price at which electricity must be generated from a specific source to break even over the lifetime of the project." Wikipedia.

[12] State of Texas, Public Utilities Commission, Texas Electric Choice Education Program, http://www.powertochoose.org.
[13] State of Texas, Public Utilities Commission, "Report to the 82nd Texas Legislature: Scope of Competition in Electric Markets in Texas," 2011.
[14] U.S. Department of Energy, Energy Information Administration, Average Retail Price of Electricity to Ultimate Consumers database.
[15] See Dan Jacobsen's comments in Thomas Mitchell, "NV Energy wants the customer to pay to shutter its coal plant," *The Ely Times*, April 12, 2013, http://www.elynews.com/opinion/article_f13561be-a2f0-11e2-80dd-001a4bcf887a.html.
[16] Roger Bezdek and Robert Wendling, "Economic and Energy Impacts of Fuel Switching in Colorado," Management Information Services, Inc., Presented at the 2011 Western Energy Policy Research Conference, Boise, Idaho, August 2011, http://epi.boisestate.edu/media/8436/22_roger%20bezdek_economic%20and%20energy%20impacts%20of%20fuel%20switching%20in%20colorado.pdf.
[17] Adam Rose and Dan Wei, "The Economic Impacts of Coal Utilization and Displacement in the Continental United States, 2015" Pennsylvania State University, Prepared for The Center for Energy and Economic Development, Inc., July 2006, available at: http://www.coalcandothat.com/images/content/PennState2006UpdateFinal072506.pdf.
[18] Gonzalo Blumel, Ricardo Espinoza, and M. de la Luz Domper, "Does Energy Cost Affect Long Run Economic Growth? Time Series Evidence Using Chilean Data," Instituto Libertad y Desarrollo, Facultad de Ingenieria, Universidad de los Andes, March 2009, http://www.libertadydesarrollo.cl/lyd/controls/neochannels/neo_ch3758/deploy/elaee_energy%20and%20growth_24%20march%202009.pdf.
[19] *Op cit.,* Bezdek and Wendling, note 15.
[20] Eugene Trisko, "Energy Cost Impacts on Nevada Families," Prepared for American Coalition for Clean Coal Electricity, March 2013, www.americaspower.org.
[21] Nevada Legislature, 77th Session, Senate Bill 252, http://www.leg.state.nv.us/Session/77th2013/Reports/history.cfm?ID=635. For an econometric analysis of the impact of Nevada's Renewable Portfolio Standard, see David Tuerck et al., "RPS: A Recipe for Economic Decline," Nevada Policy Research Institute policy study, April 2013, http://www.npri.org/docLib/20130424_RPS-ARecipeforDecline.pdf.

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