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Nevada Green Bank Study Deliverable 1 – Nevada Clean Energy Market & Policy Review

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April 2016

Project Deliverables

Review	(1) Market & Policy Review	(2) Green Bank Review	(3) Market Sizing
Synthesis		(4) Financing Gaps & Needs Assessment	
Recommendations	(5) Green Bank & Financing Solutions	(6) Next Steps	

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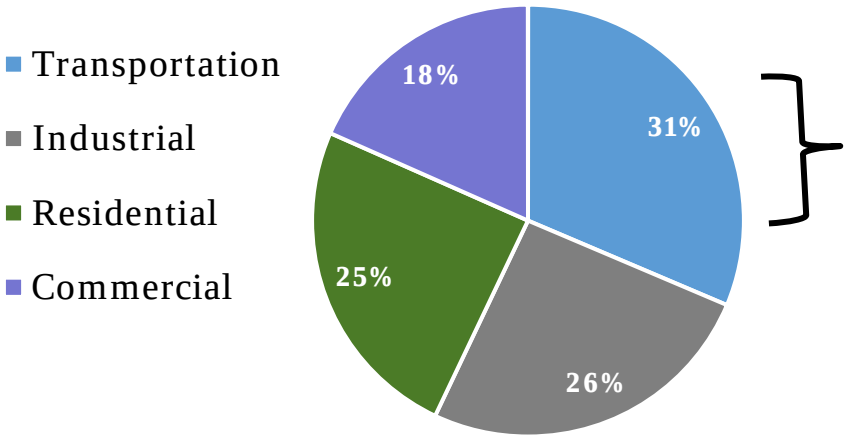
Transportation is largest use of energy; electricity mostly from natural gas & coal

Energy Use in NV by Sector



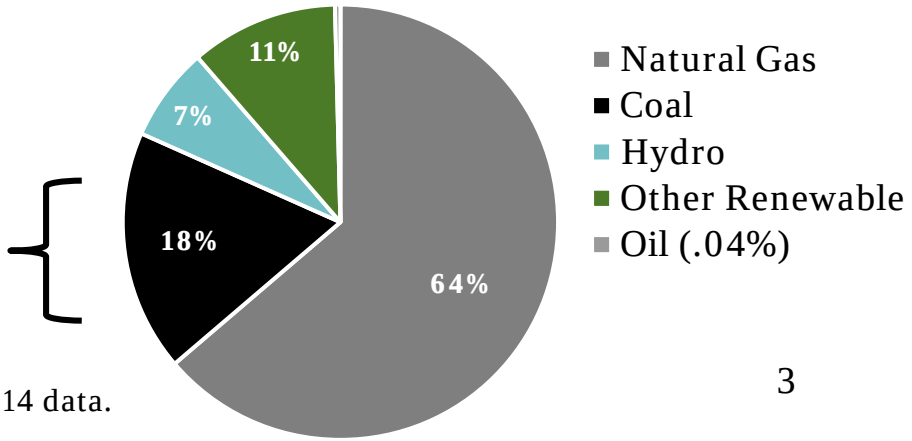
Transportation is single largest user

Buildings and Industry is 69%

Electricity Generation in NV by Source

Electricity generation dominated by fossil fuels, primarily natural gas.

Coal second largest and falling



Source: EIA 2013 data and 2014 data.

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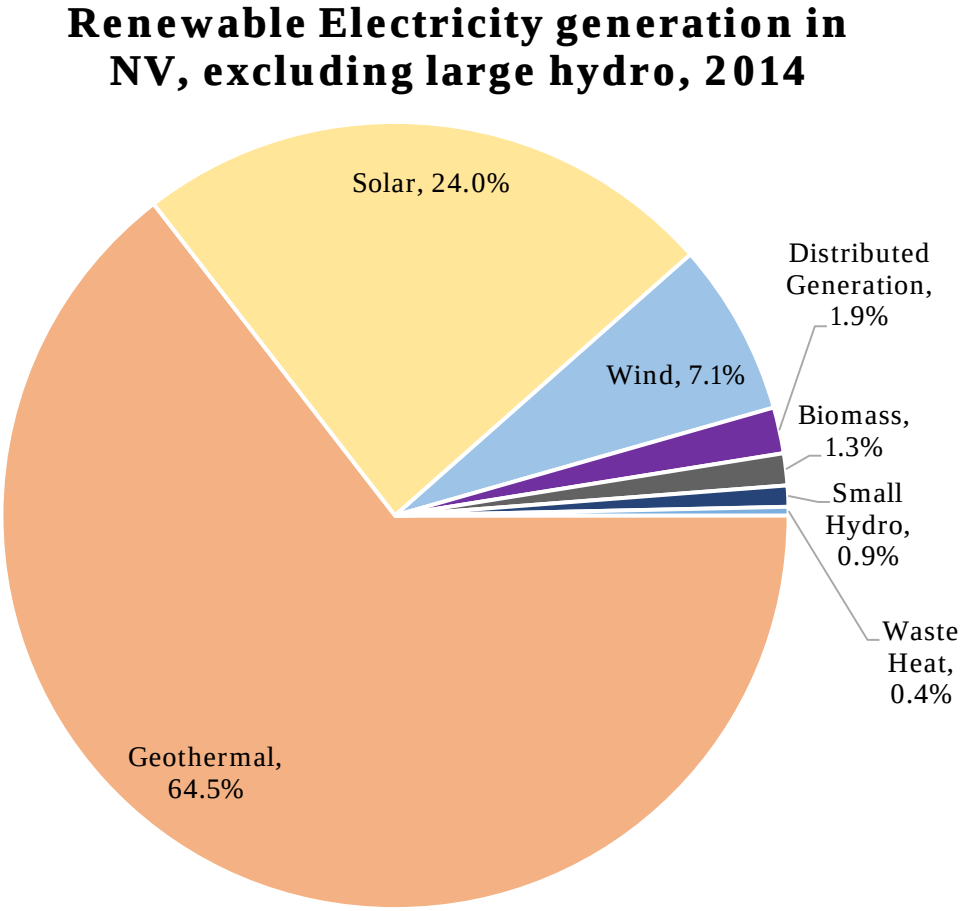
Most renewable energy is large hydro, followed by Geothermal

- Largest single renewable energy source in Nevada is Hoover Dam, which has recently suffered declines
- Geothermal followed by solar are large contributors



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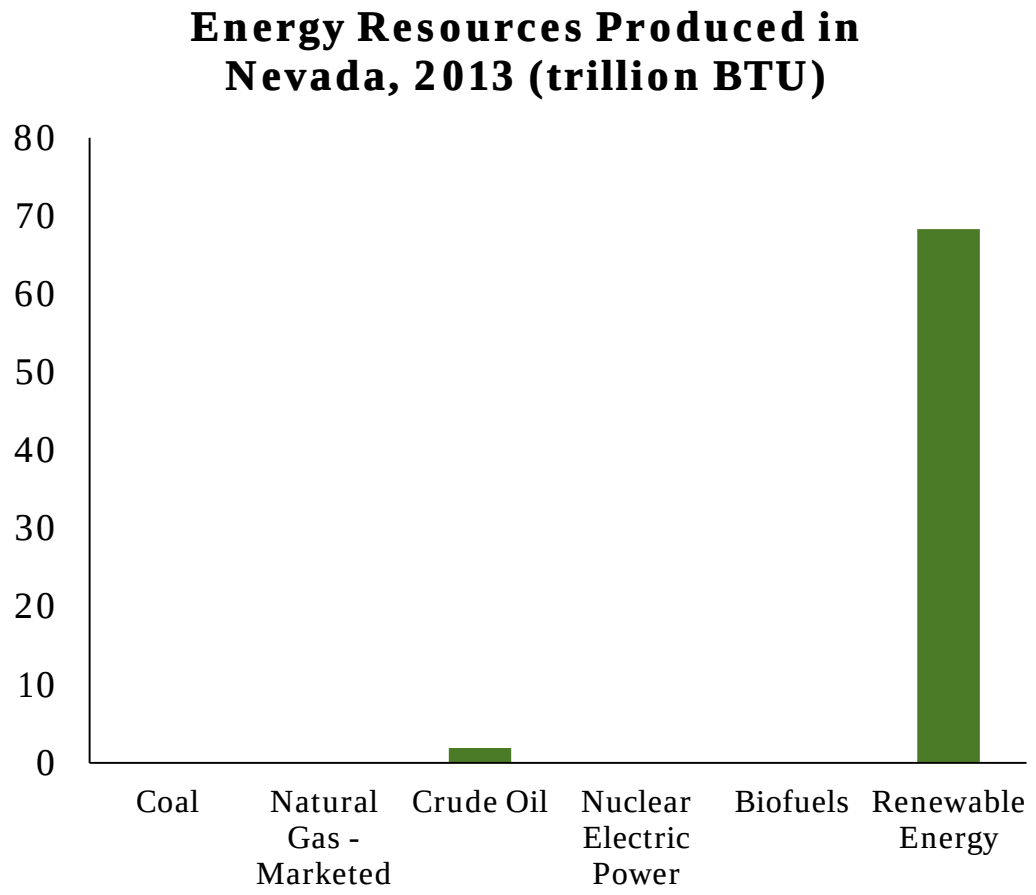
Source: EIA 2014 data.

Nevada highly dependent on energy imports

- About 90% of all energy (natural gas, coal, gasoline) used in Nevada comes from outside the state.
- Nearly 100% of all "home grown" energy in Nevada is from renewable sources



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Source: EIA 2013 data.

Electricity prices below US average, but residential prices higher than others in Mountain West

- Residential retail electricity prices in NV are slightly below the US average
- Residential customers pay higher rates than other states in the Mountain West
- Commercial customers pay below Mountain West average

Average Residential Electricity Price 2014	
State	Cents/kWh
NV	12.93
NM	12.28
CO	12.18
AZ	11.90
UT	10.65
OR	10.47
ID	9.72

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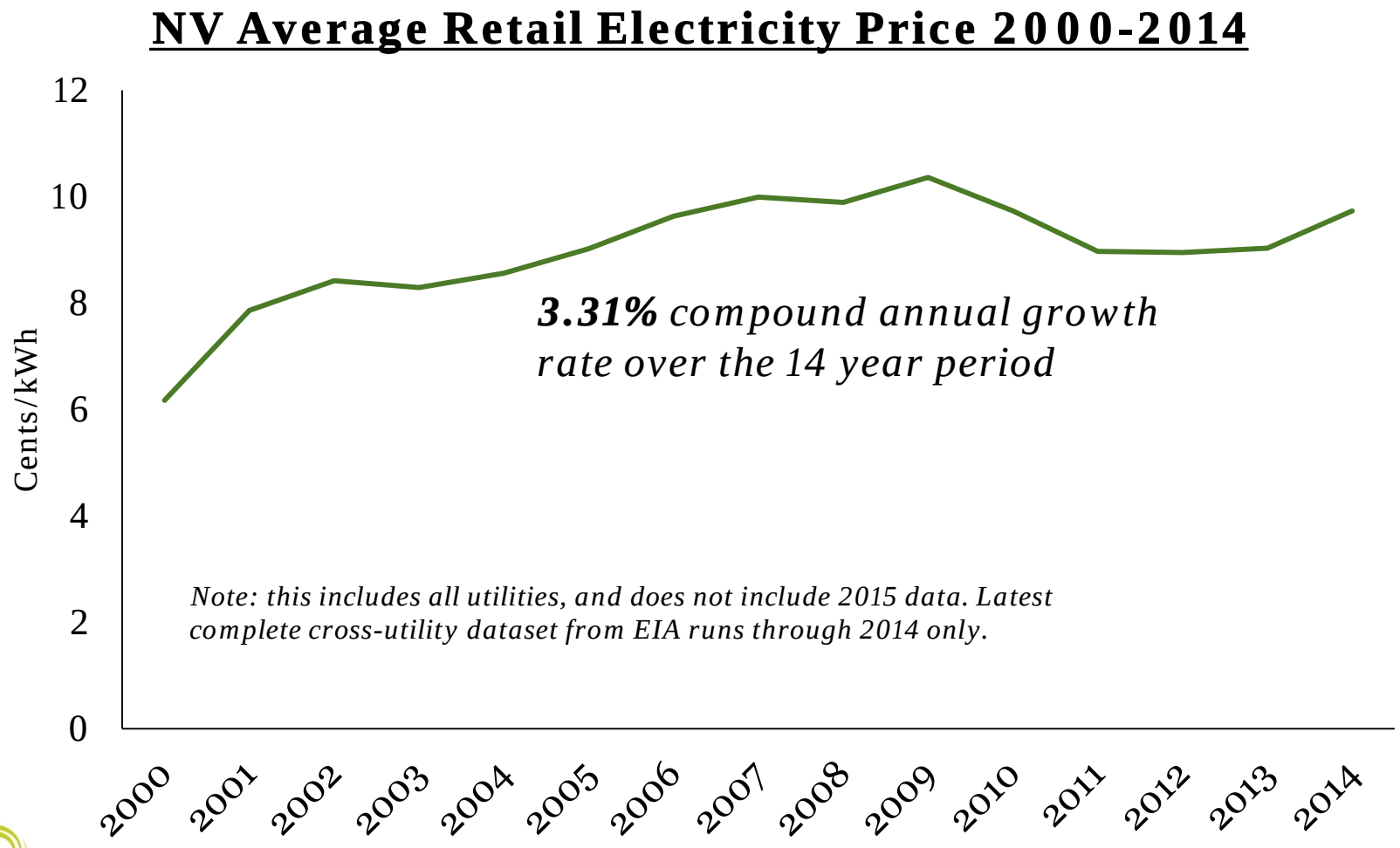
Source: EIA 2014

Electricity rates in NV show modest uptick; future rates tied in part to variable prices of natural gas



Source: EIA 2014, average across all utilities across all customers.

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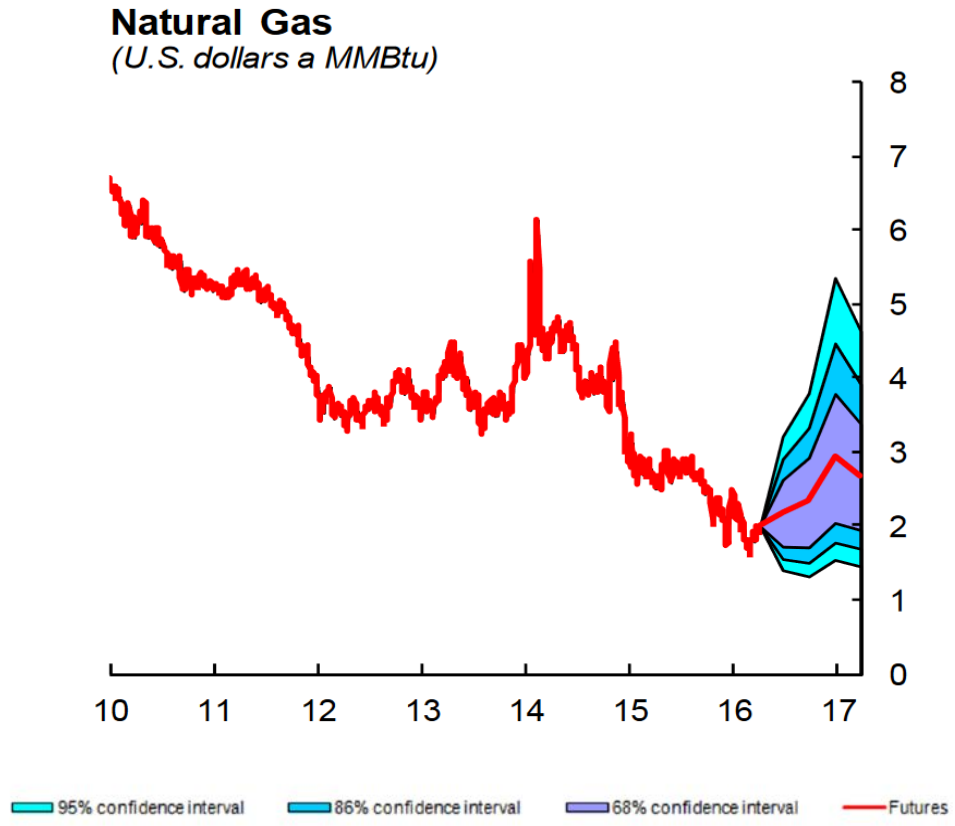
Nevada consumers exposed to natural gas price variability in commodity markets

- Natural gas prices are at historic lows, meaning lower prices for utility customers
- NV Energy does not engage in long term gas purchasing or hedging; customers exposed to any potential rise in gas prices dollar-for-dollar.



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Source: NV Energy IRP Docket 2015, IMF Commodity Price Outlook & Risks, April 2016. https://www.imf.org/external/np/res/commod/pdf/cpor/2016/cpor0416.pdf

SB 123 means NV more dependent on natural gas; large scale solar prices largely fixed & falling

Impact & New Power Plants Driven by SB 123

- Nevada's grid will be cleaner
- Most new replacement generation from SB-123 coming from natural gas
- RPS currently has little effect on fuel mix

Owned capacity (not reflected in current rates):

Plant Name	Fuel	Capacity	Total Cost (million $)
LV Cogen	Nat. Gas	274 MW	$148.9
Sun Peak	Nat. Gas	210 MW	$18
Nellis Solar PV II	Solar	15 MW	$54.5
Total		**511**	**$221.4**

Power Purchase Agreements: 100MW each

Plant Name	Fuel	PPA price	Notes
Boulder Solar	Solar	$46/MWh	fixed price
Playa Solar 2	Solar	49/MWh	levelized

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Source: PUCN presentation to legislative committee on energy November 21, 2015.

Renewable Energy Tax Abatement program provides incentives to help grow utility-scale solar market

Renewable Energy Tax Abatement Projects 2015

Plant Name	Company	Type	Electricity Offtaker	Tax Rebate (millions)
Nellis Solar	NV Energy	Solar	NV Energy Owned	$6.8
Copper Mountain Solar 4	Sempra Energy Company	Solar	Southern Cal Edison	$22.1
Playa Solar 2	First Solar	Solar	NV Energy	$24.0
Nevada Valley Solar Solutions 2	Bombard	Solar	Valley Electric Authority	$4.9
Don Campbell	Ormat	Geothermal	NV Energy	$10.2
Total				**$68**

- Incentives for large-scale projects help pay for power stations; help secure affordable costs for new utility-scale generation and PPAs
- Help utility comply with SB-123
- Help grow utility-scale solar and geothermal market

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Source: 2015 State of Nevada Energy Report, Governor's Office of Energy (GOE)

Limited number of programs across Nevada offer clean energy support to other select markets

Direct Energy Assistance Loan (DEAL)
• DEAL offers EE home upgrade loans to state employees • Paid off via automatic monthly payroll deduction • Interest-free loans • Up to $6,000 per homeowner • Terms up to 60 months, with monthly payments of $50 or $100 • Simple & streamlined structure

Rural Energy for America Program (REAP)
• USDA program that offers grants and loan guarantees for rural clean energy projects • From 2003 to 2014, wind project assistance worth $150,832, and loan guarantees totaling $8,319 • Energy efficiency: $40,124 • Solar: $961,361 • Biomass: $105,703,595 – (one large biorefinery project)

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Many of Nevada's clean energy programs are run by the Governor's Office of Energy (GOE)

Performance Contract Audit Assistance

- Funds financial grade audits for energy efficiency, which is the first step to a performance contract upgrade
- Since 2014, GOE awarded $328,000
- As of 2015, has received three additional applications.
- Expects to process more than $680,000 that will lead to performance contracts for efficiency

Revolving Loan Program

- Administered by GOE, originally funded by ARRA
- Standard loan terms and sizes for large projects $100,000 – $1 million
- Since 2009, more than $17.4 million has been loaned to 20 projects.
- Original $8 million in funding has revolved and increased to more than $17 million, primarily due to moving unspent ARRA funds from other programs into the Loan Fund

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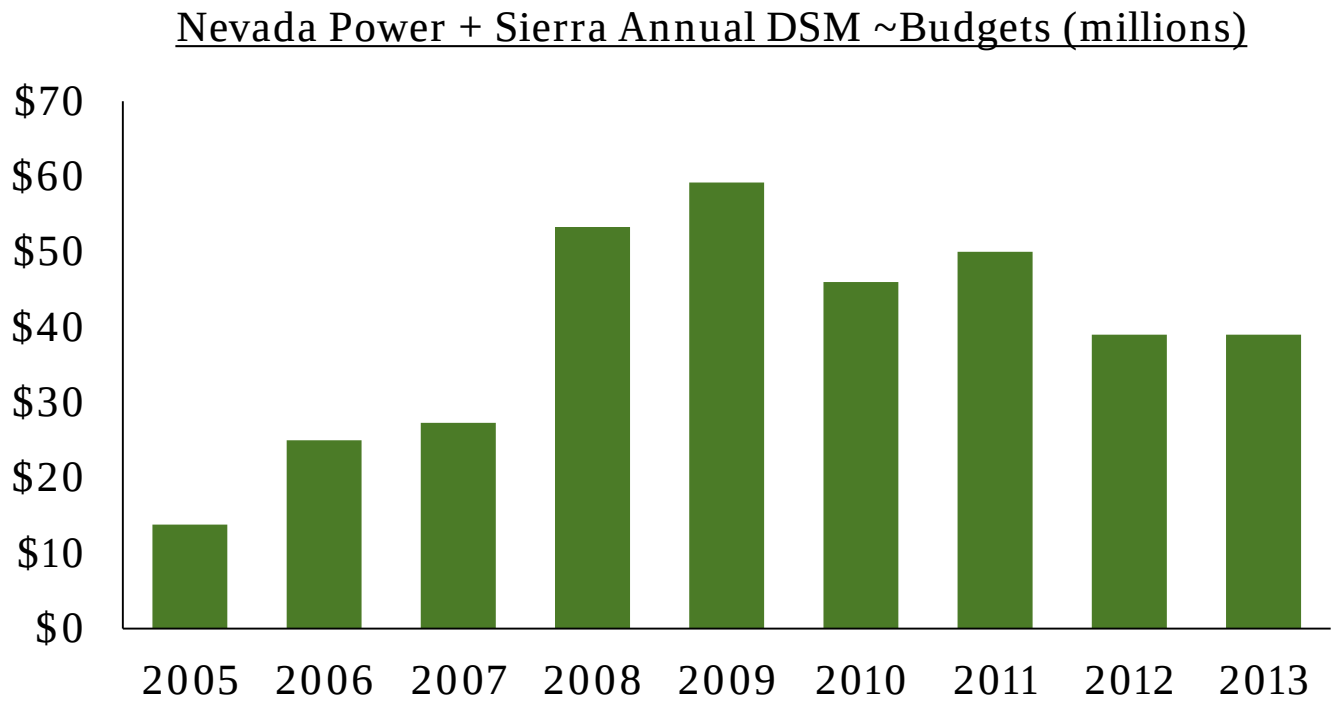
Source: 2015 State of Nevada Energy Report, Governor's Office of Energy (GOE)

Ratepayer dollars used to support Demand Side Management rebates approx. $50 million annually

- Funded through charge on utility bills
- Nevada Power DSM program cut by $11 million in Dec 2015



Source: NV Energy PUCN Dockets and SWEEP

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NV Energy proposed annual budgets of ~$70 million of DSM grants for 2016, but several programs denied

Nevada Power- DSM Programs Request 2016	
Program	**Budget**
Residential Lighting	$4,500,000
Refrigerator Recycling	$1,100,000
Residential AC	$9,000,000
Pool Pumps	$1,850,000
Home Energy Reports	$ 700,000
Solar Water Heating	$100,000
Non-Profit Agency Grants	$150,000
Energy Smart Schools	$1,800,000
Commercial Services	$13,000,000
Energy Education	$400,000
Energy Assessments	$1,100,000
Market and Technology Trials	$400,000
Demand Response - Residential	$16,300,000
Demand Response - Commercial	$5,600,000
Total	**$56,000,000**

Sierra- DSM Programs Request 2016	
Program	**Budget**
Residential Lighting	$1,400,000
Refrigerator Recycling	$500,000
Home Energy Reports	$520,000
Solar Water Heating	$200,000
Non-Profit Agency Grants	$110,000
Energy Smart Schools	$400,000
Commercial Services	$4,500,000
Energy Education	$250,000
Energy Assessments	$600,000
Market and Technology Trials	$100,000
Demand Response - Residential	$1,750,000
Demand Response - Commercial	$2,677,000
Demand Response - Agricultural	$690,000
Total	**$13,697,000**

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Source: Source NV Energy
www.leg.state.nv.us/Interim/78th2015/Exhibits/Energy/E120815J.pdf

Successful NV Energy renewable grant program gone through 90% solar funds, 75% hydro/wind funds

- RenewableGenerations program created by 2003 legislature
- Supports distributed generation technology
- Funded through charge on utility bills
- Since 2003, over $257 million spent

NV Energy Renewable rebates 2003-2015 (million $)	
Initial Program Funding	$295.3
Amount Spent/Committed	$257.1
Remaining Funding	$38.2

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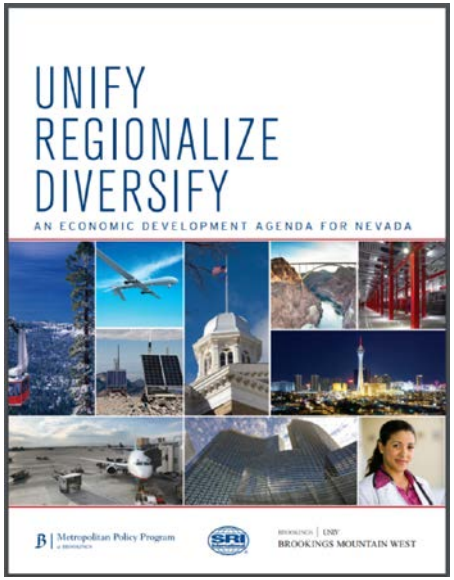
Source: NVEnergy
http://energy.nv.gov/uploadedFiles/energynvgov/content/Programs/Queue%20and%20RenGen%20Update%20v5.pdf

EVs a growing part of Nevada's future, though penetration of EVs and charging stations still low



Nevada EV Landscape

- Transportation uses more energy than any other sector in Nevada
- GOED and associated Brookings report name clean energy as one of the main pillars for a new diversified Nevada economy
- GOED worked with Tesla, and provided tax breaks to assure that new "gigafactory" built in Nevada
- Nevada's economic future now more intertwined with the success of electric vehicles
- "Electric Highway" of charging stations announced for Route 95

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Key Takeaways

- Nevada highly dependent on imported fossil fuels; only domestic energy sources are renewable; increasingly exposed to natural gas fuel price
- SB-123 driving increased natural gas and renewables; price of those renewables lowered by tax abatements for utility-scale plants
- Wide variety of programs in Nevada, through multiple entities, supporting both large- and small-scale clean energy and energy efficiency
- Support for distributed generation and efficiency is declining with reduced rebates and dwindling budgets
- Most state-level support for clean energy is in the form of grants/rebates, not financing; one state-supported financing program highly innovative

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Thank You

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