


POSITIVE
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2014 Integrated Resource Plan

OCC Public Meeting
July 30, 2014

WITH ALL YOUR POWER  WHAT WOULD YOU DO?

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Presentation Outline

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- Background
- Analysis
- Other Considerations
- Action Plan

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2014 Integrated Resource Plan

BACKGROUND

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In 2007 OG&E announced its "2020 Goal"

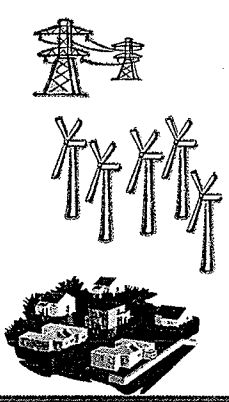
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- 2020 Goal is no new incremental fossil fuel generation until the year 2020
- OG&E developed a three-pronged plan to accomplish the goal while preparing for potential environmental legislation and/or regulation

1) Construct Transmission Lines to Deliver Wind to OG&E Load

2) Add up to 640 MW of Wind Generation

3) Manage load by terminating wholesale contracts and increasing demand side management programs





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Progress has been made toward achieving the 2020 Goal and plans are in place to continue the success

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| Year | Wind | DSM | Wholesale |
|--------------|----------------------------------|---------------|--------------|
| 2008 | | 2 | 18 |
| 2009 | OU Spirit – 101 | 13 | |
| 2010 | Keenan – 152 | 12 | 5 |
| 2011 | Taloga – 130 Crossroads – 228 | 22 | |
| 2012 | Cowboy – 60 | 118 | 14 |
| 2013 | | 99 | 50 |
| Total | 674 MW | 266 MW | 87 MW |

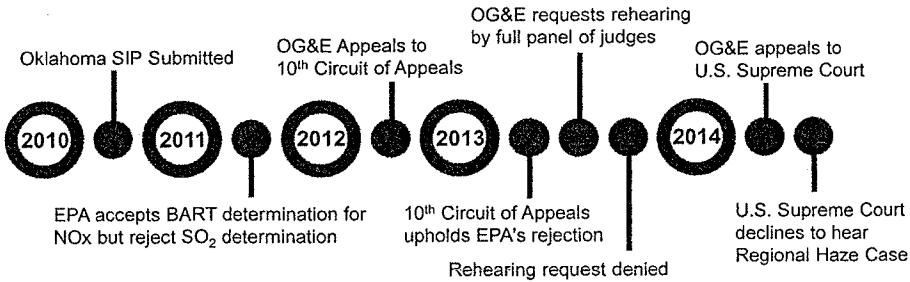
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Environmental challenges and deadlines

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- **Regional Haze** – Legal measures have been exhausted so OG&E now must comply with the Environmental Protection Agency (EPA) Federal Implementation Plan (FIP) by **January 4, 2019**
- **Mercury Air Toxics Rules (MATS)** - OG&E requested and has received a one-year extension for compliance to **April 16, 2016** from the Oklahoma Department of Environmental Quality




2010: EPA accepts BART determination for NO_x but reject SO₂ determination

2011: Oklahoma SIP Submitted

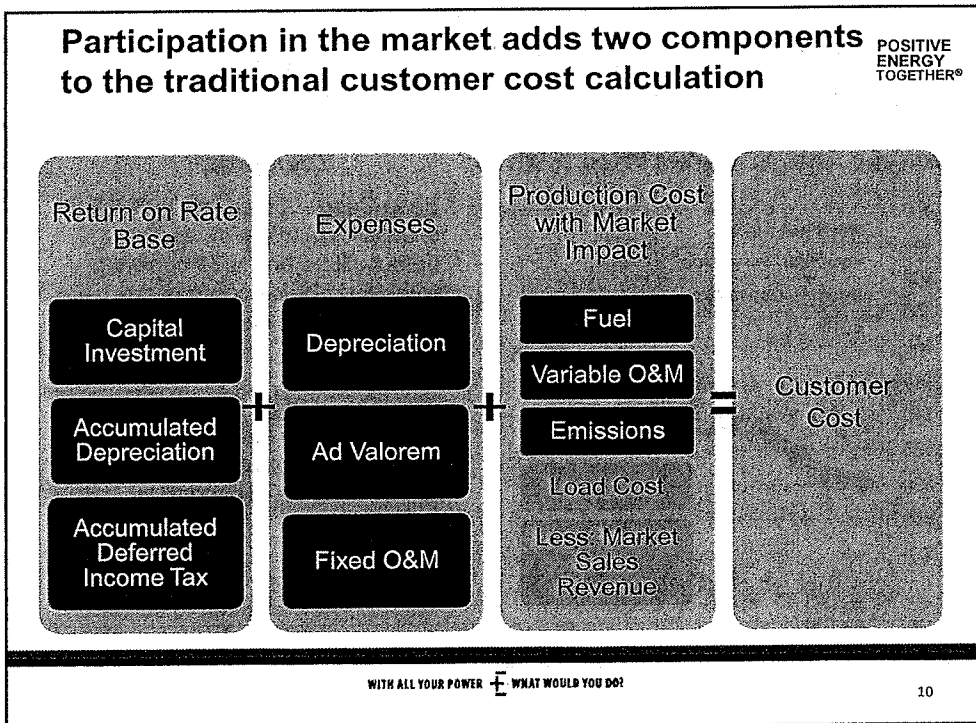
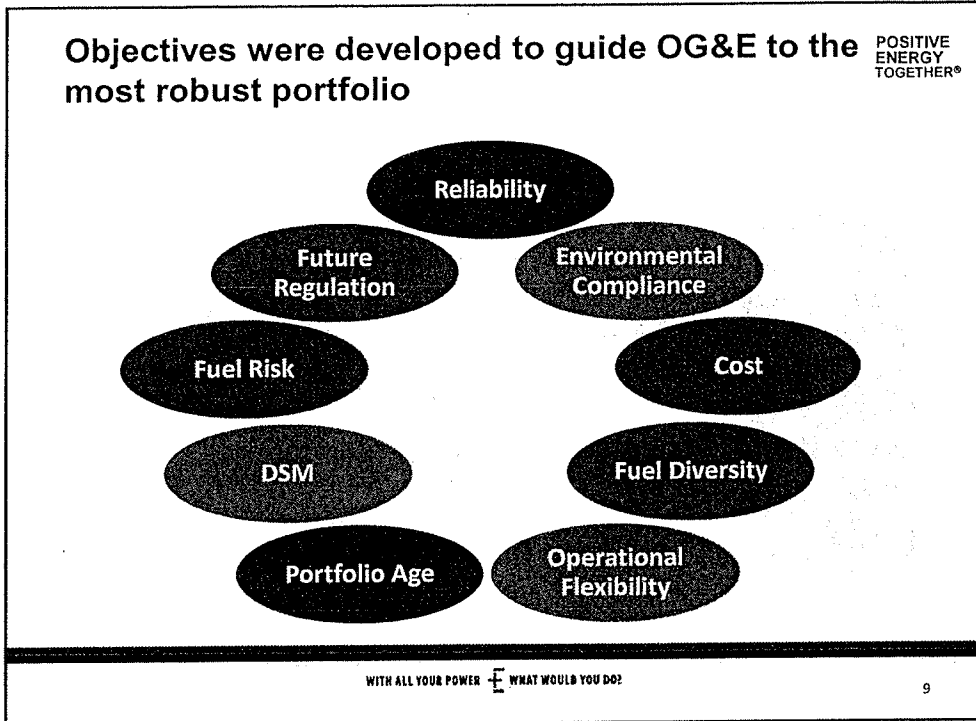
2012: OG&E Appeals to 10th Circuit of Appeals

2013: 10th Circuit of Appeals upholds EPA's rejection; OG&E requests rehearing by full panel of judges; Rehearing request denied

2014: OG&E appeals to U.S. Supreme Court; U.S. Supreme Court declines to hear Regional Haze Case

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OG&E evaluated five alternative environmental compliance plans

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- Scrub/Convert**
 - Scrub Sooner 1 by 2018 and Sooner 2 by 2019
 - Convert two Muskogee units by 2019
- Scrub**
 - Scrub Muskogee 4 by 2018 and Muskogee 5 by 2019
 - Scrub Sooner 1 by 2018 and Sooner 2 by 2019
- Convert**
 - Convert four coal units to gas by 2019
- Scrub/Replace**
 - Scrub Sooner 1 by 2018 and Sooner 2 by 2019
 - Replace two Muskogee coal units with new CCs by 2019
- Replace**
 - Replace four coal units with new CCs by 2019

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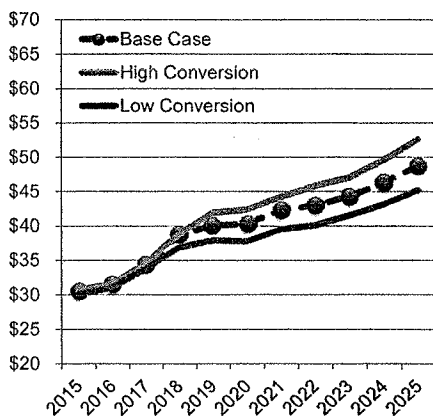
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PROMOD was used to project future market energy prices under various scenarios


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Average Annual Market Price (\$/MWh)

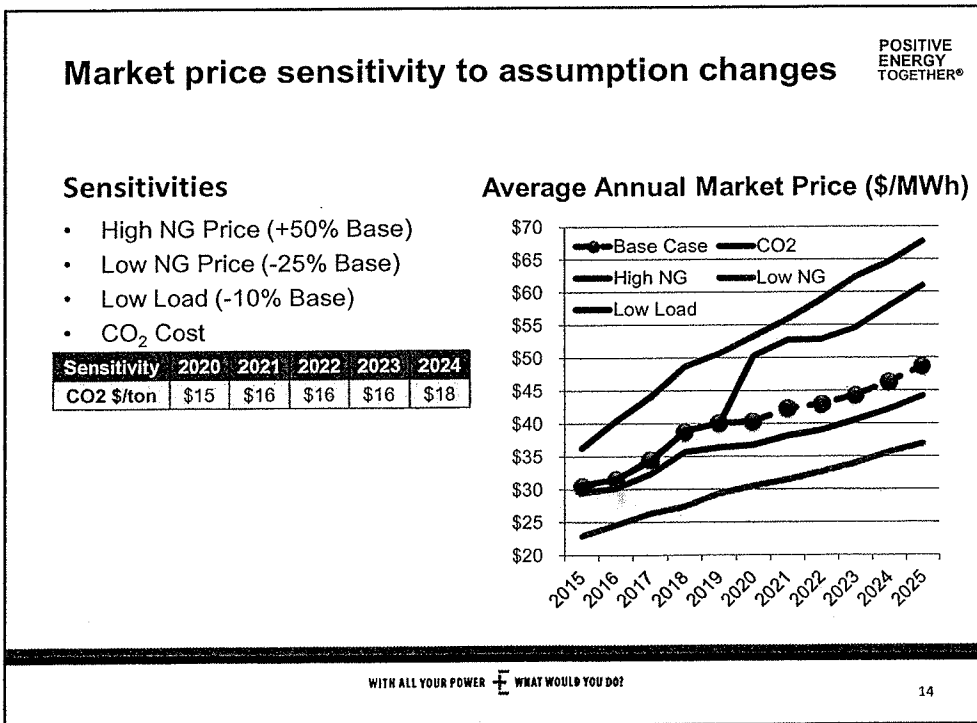
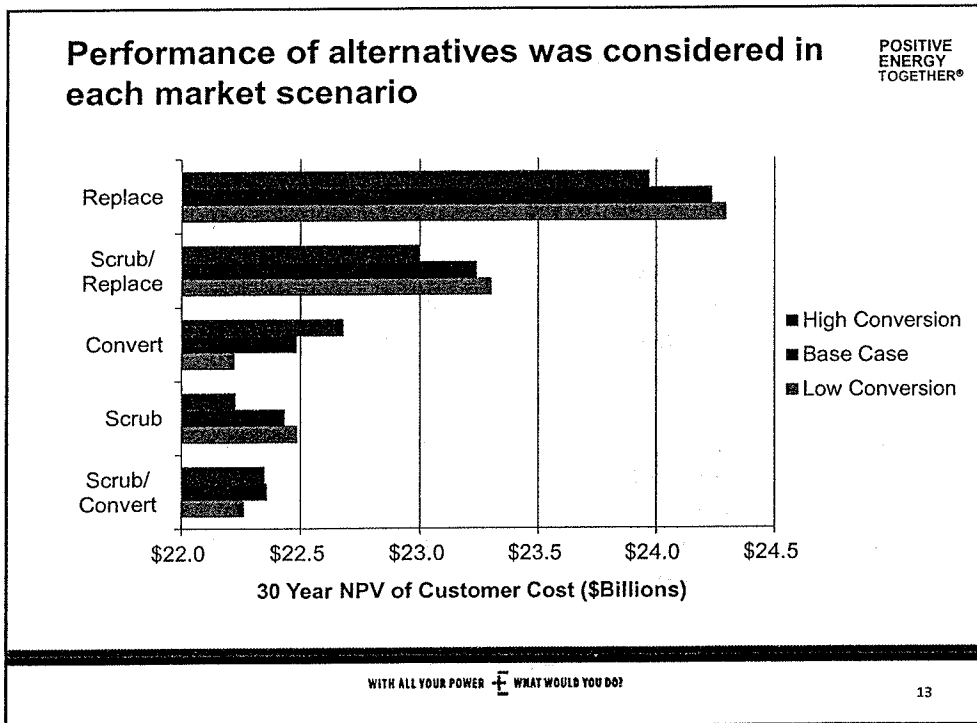
Scenarios

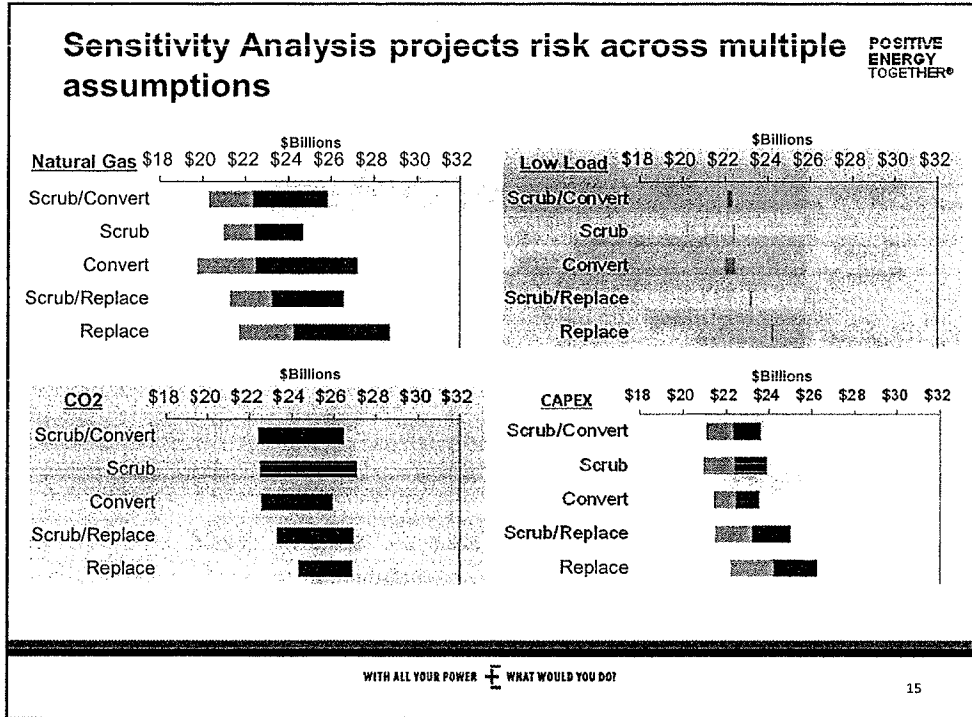


- Base Case – Coal units in SPP smaller than 200 MW and coal units built before 1977 currently without emission controls are assumed to be converted to natural gas
- High Conversion – All coal units in SPP that have not announced plans to control emissions are assumed to be converted to natural gas.
- Low Conversion – Only coal units with announced plans to convert

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2014 Integrated Resource Plan


OTHER CONSIDERATIONS

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Mustang Retirement and Replacement

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- **Plant has reached the end of its useful life**
 - When retired the unit age ranges from 58 to 67 years
 - Units of this age are at a greater risk of catastrophic failure
 - Component failure due to age creates a greater safety risk for employees
 - Parts for units of this age are often non-existent
- **Existing site has a number of benefits**
 - Located near Oklahoma's largest load center, Oklahoma City
 - Provide reliability support function due to location within the load area
 - System restoration
 - Voltage support
 - Existing infrastructure
 - Transmission interconnection
 - Water supply with water rights
 - Gas pipeline connection
 - Property and roads
 - Existing environmental air permit
- **CT's offer reliability benefits**
 - Quick start, smaller units offer flexibility
 - Support the intermittency of wind
 - Support the growth of distributed generation

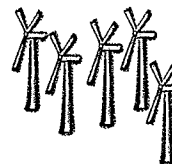
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Why not more wind at this time?

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- **OG&E is committed to renewable generation**
 - OG&E is not saying no more wind; it's saying not now
 - Continue to monitor the situation to determine when the time is right
- **Wind is not a viable solution to Regional Haze**
 - Wind does not reduce the emission rate of coal units
 - OG&E must maintain its planning capacity margin requirements
 - Only 5% of nameplate wind generation can be counted towards capacity margin requirements
 - It takes 10,000MW of wind to replace 500MW of fossil fuel capacity
- **Delivery of wind to the market is a concern**
 - 2013 RFI respondents unwilling to accept all economic curtailment risk
 - Curtailments via price signals may occur
 - Congestion reduces the value of wind energy
 - More than 2000MW of additional wind generation will soon come on line potentially increasing congestion
- **Wind developers have the ability to sell into the SPP**
 - OG&E is not putting a roadblock up for wind developers



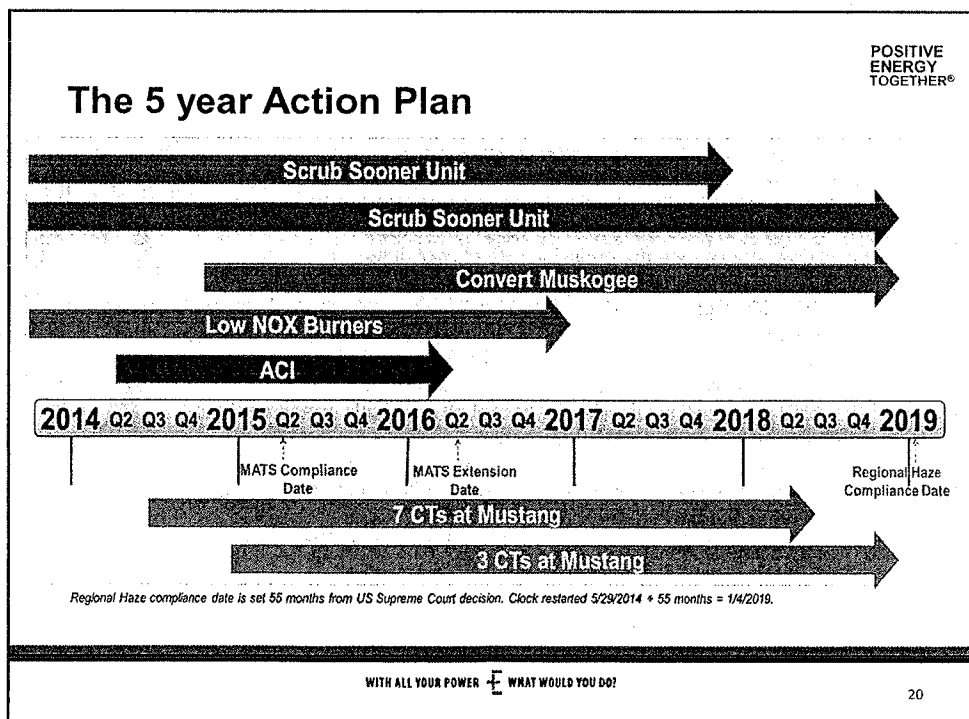
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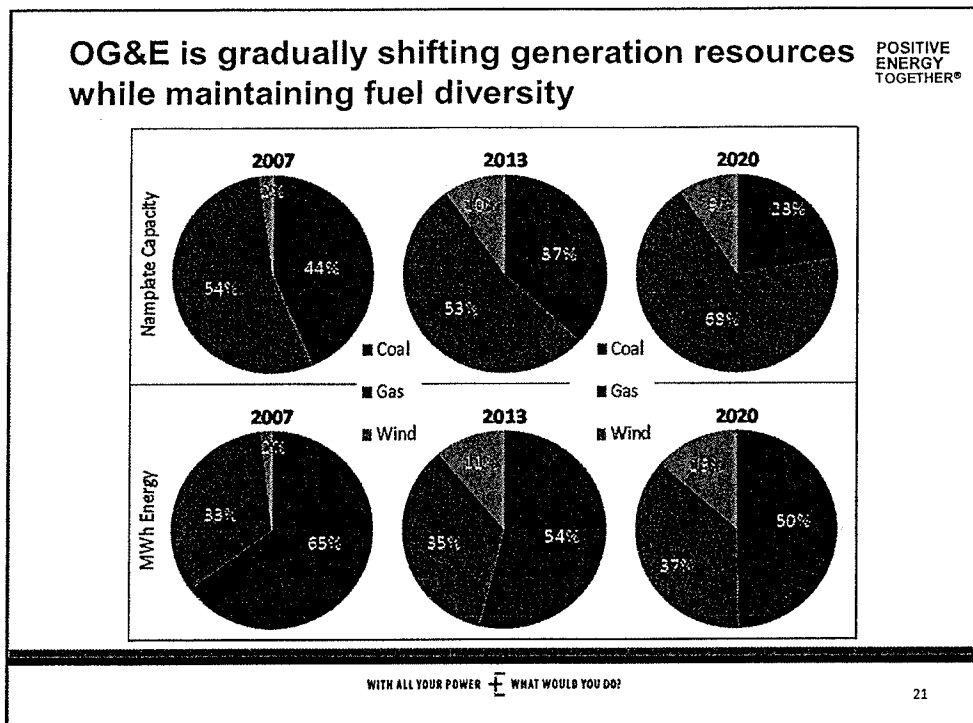
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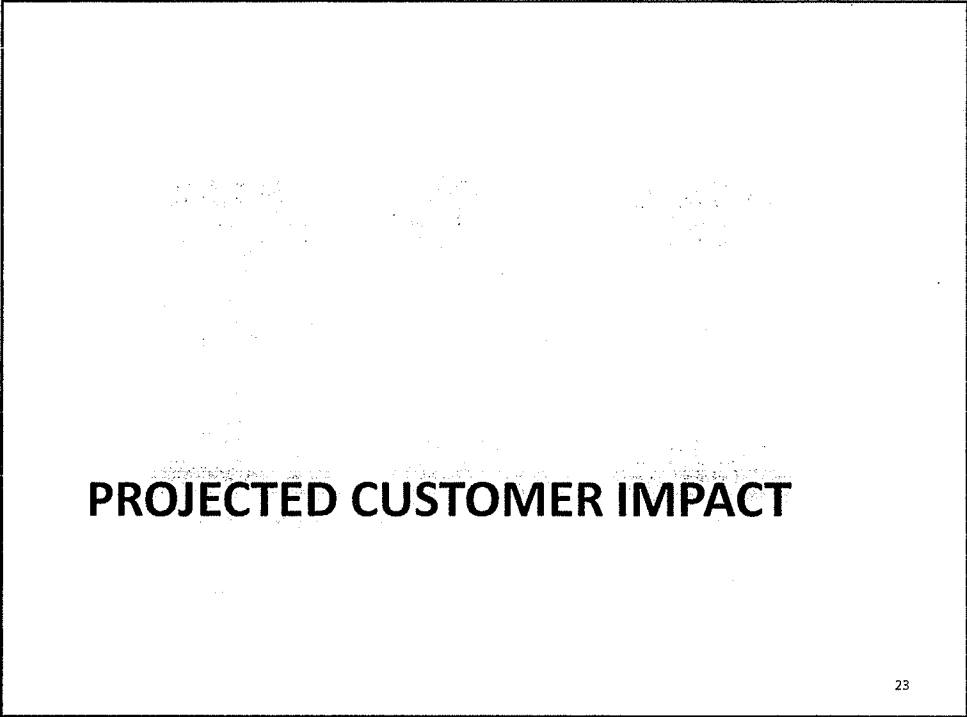
ACTION PLAN

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- ### Changes to the IRP since technical conference
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- **External stakeholder feedback**
 - Included estimated retirement dates of gas steam units identified in 2012 IRP
 - Included annual SO₂, NO_x and CO₂ emission output as modeled in IRP in the appendix
 - Included method for calculating CO₂ price in the appendix
 - Clarify wind RFI (request for information) responses
 - **Internal changes:**
 - Updated Scrubber costs (including spending schedule)
 - NPV values and charts to reflect updates
 - Updated EE and DR data in report and Appendix A
 - Corrected error in CO₂ sensitivity case (Previously double counted the CO₂ impact)
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Customer Impact

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- **Compounded annual growth rate in typical customer bill 2014 - 2019**

| Before Fuel Adjustment Clause | | With Fuel Adjustment Clause | |
|-------------------------------|------|-----------------------------|------|
| Residential | 1.9% | Residential | 2.9% |
| General Service | 1.8% | General Service | 2.8% |
| Power & Light | 1.8% | Power & Light | 3.2% |
| Large Power & Light | 1.8% | Large Power & Light | 3.7% |

Estimated based on cost projections from 2014 IRP

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Average Monthly Cost Before FAC

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| Monthly Impact | Average Monthly kWh | Average Monthly Bill | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---------------------|---------------------|----------------------|------------|------------|------------|------------|------------|-------------|
| Residential | 1,100 | \$ 108.51 | \$ 0.80 | \$ 1.27 | \$ 1.44 | \$ 3.57 | \$ 3.42 | \$ 10.50 |
| General Service | 1,800 | 185.61 | 1.33 | 2.13 | 2.41 | 5.98 | 5.72 | 17.58 |
| Power & Light | 43,000 | 2,982.53 | 21.22 | 33.89 | 38.24 | 95.08 | 91.00 | 279.43 |
| Large Power & Light | 4,100,000 | \$209,584.22 | \$1,526.34 | \$2,437.33 | \$2,750.76 | \$6,838.93 | \$6,544.83 | \$20,098.18 |

| Monthly Impact | CAGR | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---------------------|------|------|------|------|------|------|-------|
| Residential | 1.9% | 0.7% | 1.2% | 1.3% | 3.3% | 3.2% | 9.7% |
| General Service | 1.8% | 0.7% | 1.1% | 1.3% | 3.2% | 3.1% | 9.5% |
| Power & Light | 1.8% | 0.7% | 1.1% | 1.3% | 3.2% | 3.1% | 9.4% |
| Large Power & Light | 1.8% | 0.7% | 1.2% | 1.3% | 3.3% | 3.1% | 9.6% |

Estimated based on cost projections from 2014 IRP

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
Average Monthly Cost With FAC

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| Monthly Impact | Average Monthly kWh | Average Monthly Bill | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---------------------|---------------------|----------------------|------------|------------|------------|------------|-------------|-------------|
| Residential | 1,100 | \$ 108.51 | \$ 0.80 | \$ 2.74 | \$ 1.63 | \$ 4.06 | \$ 7.33 | \$ 16.55 |
| General Service | 1,800 | 185.61 | 1.33 | 4.59 | 2.73 | 6.79 | 12.28 | 27.73 |
| Power & Light | 43,000 | 2,982.53 | 21.22 | 90.95 | 45.81 | 113.84 | 243.00 | 514.81 |
| Large Power & Light | 4,100,000 | \$209,584.22 | \$1,526.34 | \$7,683.36 | \$3,446.16 | \$8,562.98 | \$20,518.89 | \$41,737.74 |

| Monthly Impact | CAGR | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---------------------|------|------|------|------|------|------|-------|
| Residential | 2.9% | 0.7% | 2.5% | 1.5% | 3.7% | 6.8% | 15.3% |
| General Service | 2.8% | 0.7% | 2.5% | 1.5% | 3.7% | 6.6% | 14.9% |
| Power & Light | 3.2% | 0.7% | 3.0% | 1.5% | 3.8% | 8.1% | 17.3% |
| Large Power & Light | 3.7% | 0.7% | 3.7% | 1.6% | 4.1% | 9.8% | 19.9% |

Estimated based on cost projections from 2014 IRP

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Feedback

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