

# PNM 2014-2033 Integrated Resource Plan

OCTOBER 4, 2013



Talk to us.



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STAR Group

# AGENDA

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## OVERVIEW OF IRP PROCESS AND PROGRESS TO DATE

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- Welcome, Introductions and Safety
- Ground Rules
- IRP Goals
- Describe IRP Process
- Illustrate Results

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## MEETING GROUND RULES

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- Questions and comments are welcome; please be mindful of our time constraints
- Comments should be respectful of all participants; okay to be tough on the issue, but easy on the person
- “Listen to Learn, but Participate Fully”
- Cell phones silent
- Reminder: today’s presentation is not PNM’s plan or a financial forecast, it is an illustration of the IRP modeling process

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## DISCLOSURE REGARDING FORWARD LOOKING STATEMENTS

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The information provided in this presentation contains scenario planning assumptions to assist in the Integrated Resource Plan public process and should not be considered statements of the company's actual plans. Any assumptions and projections contained in the presentation are subject to a variety of risks, uncertainties and other factors, most of which are beyond the company's control, and many of which could have a significant impact on the company's ultimate conclusions and plans. For further discussion of these and other important factors, please refer to reports filed with the Securities and Exchange Commission. The reports are available online at [www.pnmresources.com](http://www.pnmresources.com).

The information in this presentation is based on the best available information at the time of preparation. The company undertakes no obligation to update any forward-looking statement or statements to reflect events or circumstances that occur after the date on which such statement is made or to reflect the occurrence of unanticipated events, except to the extent the events or circumstances constitute material changes in the Integrated Resource Plan that are required to be reported to the New Mexico Public Regulation Commission (NMPRC) pursuant to Rule 17.7.4 New Mexico Administrative Code (NMAC).

# IRP GOALS

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## PNM'S 2014-2033 INTEGRATED RESOURCE PLAN

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- 20-year planning horizon
- Revisit plan every three years
- Create a four-year action plan
- Improve plan through public advisory process
- File with NM Public Regulation Commission for review & acceptance

### Legislation Governing Utility IRP:

- New Mexico Public Utility Act – 62-3-1 et.seq. NMSA
- Renewable Energy Act – 62-16-1 et.seq. NMSA
- Efficient Use of Energy Act – 62-17 NMSA

### NMPRC Rules:

- Integrated Resource Plans for Electric Utilities – 17.7.3 NMAC
- Renewable Energy for Electric Utilities – 17.9.572 NMAC
- Energy Efficiency – 17.7.2 NMAC

# IRP GOALS

## BALANCE



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## IRP PROCESS

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### Collect Assumptions

- Data
  - Existing System
  - Known Technologies
- Projections
  - Demand
  - Prices
  - Regulations

### Plan to Understand Risks

- Define Scenarios
- Identify Sensitivities

### Analyze

- Model Potential Solutions
- Identify best solutions using a range of criteria
- Test best solutions under range of assumptions

### Evaluate

- What works best under most conditions?
- Which risks are easiest to mitigate?
- Most cost effective portfolio
- 4 year action plan

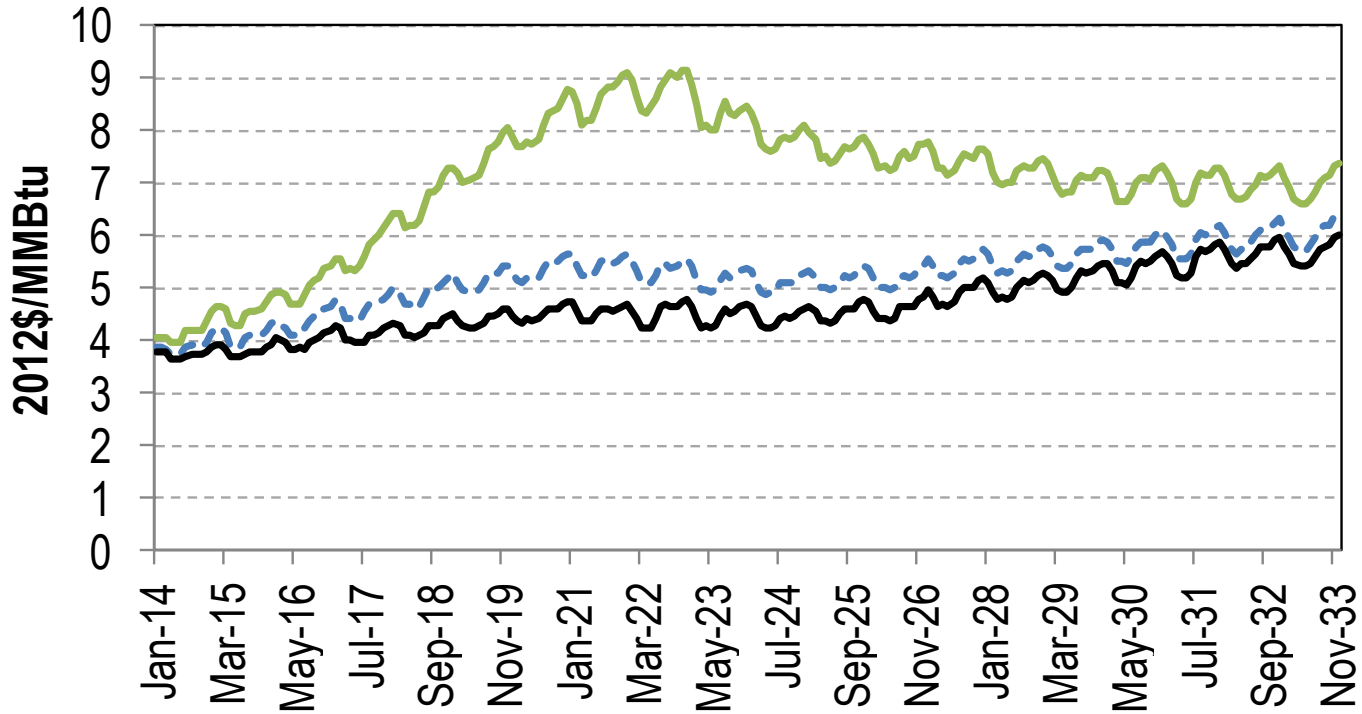
### Report

- Document the process
- File with NMPRC by June 30, 2014



# COLLECT ASSUMPTIONS

## PROJECTIONS EXAMPLE: NATURAL GAS PRICES



# PLAN TO UNDERSTAND RISKS

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## SCENARIO EXAMPLES: SJGS REGIONAL HAZE RULE

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### Revised State Implementation Plan

- Approved by the New Mexico Environmental Improvement Board September 5
- Requires retiring SJGS Units 2 and 3 by end of 2017
- Requires installation of Selective Non Catalytic Reduction technology on SJGS Units 1 and 4 by January 31, 2016, assuming EPA approval by November 2014

### Federal Implementation Plan

- Current requirement is Federal Implementation Plan
- Requires installation of Selective Catalytic Reduction technology on all four units
- Revised SIP is less expensive and will result in greater environmental benefits for same visibility improvement

# PLAN TO UNDERSTAND RISKS

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## SENSITIVITY EXAMPLES: PVNGS UNIT 3 PRICE & SOLAR CONSTRUCTION COST

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### PVNGS Unit 3

- Currently a non-jurisdictional resource
- Benefit to the portfolio depends upon cost

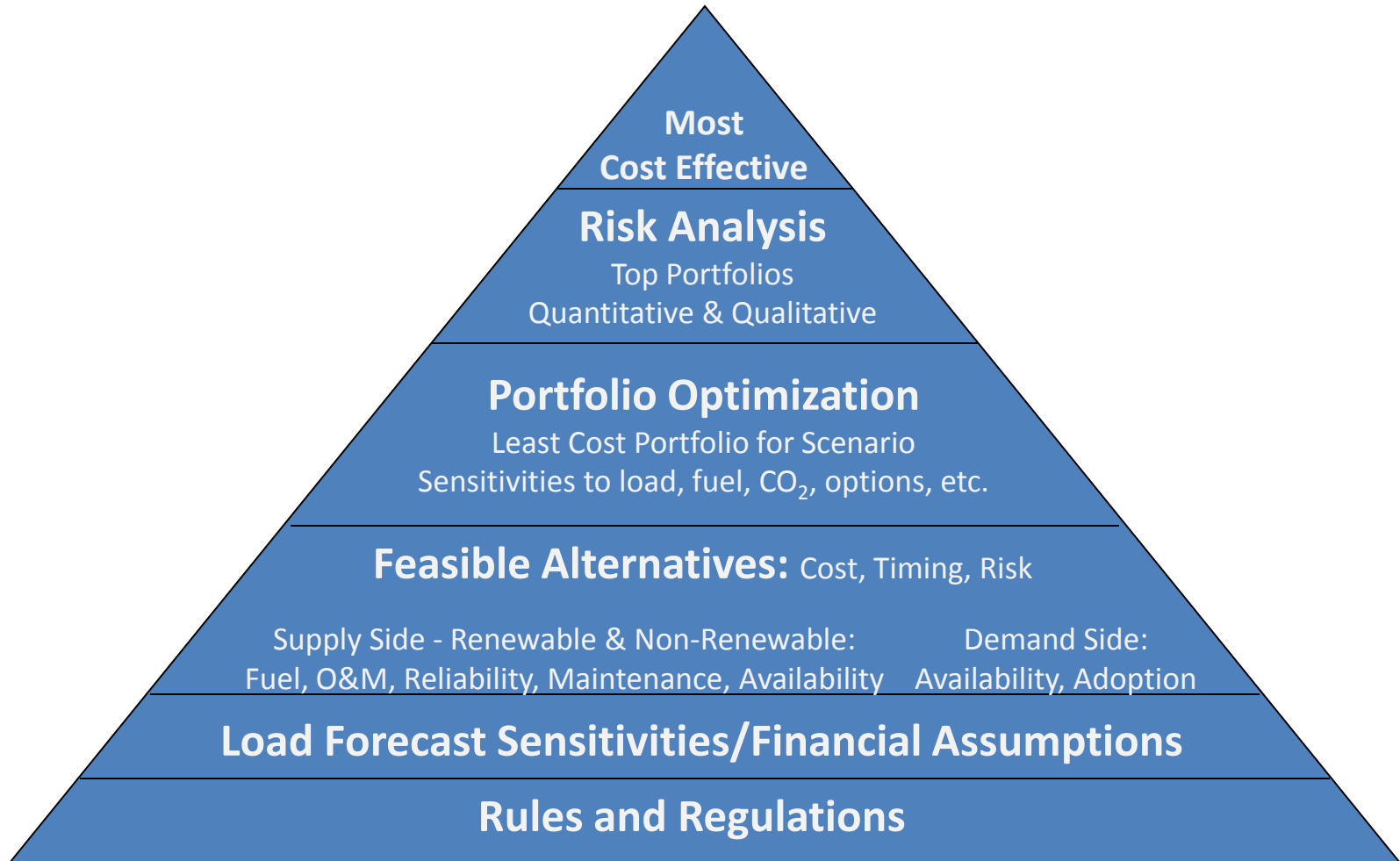
### Single Axis Tracking Solar Photovoltaic

- Price of solar has declined over the past four years
- PNM's first single axis tracking systems are currently pending before the NMPRC
- Vary construction cost and capability to meet peak demand to determine benefits and risks

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## ANALYZE

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# ANALYZE

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## PORTFOLIO OPTIMIZATION: STRATEGIST®

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- The Strategist® model is a proprietary software product of Ventyx, Inc. It is widely used in the electric utility industry as a comprehensive resource planning tool.
- Strategist® builds thousands of possible portfolio alternatives over a 20-year plan horizon. The model calculates cost for each. This includes determining which resources would be dispatched to meet demand.
- All portfolios are ranked by net present value cost. The top-ranked portfolio is the least cost resource mix for that scenario

# ANALYZE

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## PORTFOLIO OPTIMIZATION ILLUSTRATION – REVISED SIP WITHOUT PALO VERDE UNIT 3

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### Revised SIP at SJGS

- Install SNCR on Units 1 and 4
- Retire SJGS Units 2 and 3 by December 31, 2017

### New generation sources

- 40 MW Single Axis Tracking Solar PV in 2016
- Acquire additional capacity in SJGS Unit 4 (currently assuming 79 MWs)
- 177 MW Heavy Frame Gas CT online in Q1 2018
- 80 MW of Aeroderivative gas peakers in 2018
- 20 MW Single Axis Tracking Solar PV in 2018

# ILLUSTRATE PROCESS

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## PORTFOLIO OPTIMIZATION ILLUSTRATION – REVISED SIP WITH PALO VERDE UNIT 3

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### Revised SIP at SJGS

- Install SNCR on Units 1 and 4
- Retire SJGS Units 2 and 3 by December 31, 2017

### New generation sources

- 40 MW Single Axis Tracking Solar PV in 2016
- Acquire additional capacity in SJGS Unit 4 (currently assuming 79 MWs)
- 134 MW PVNGS Unit 3 to coincide with SJGS retirement
- 177 MW Heavy Frame Gas CT online in Q1 2018

# ILLUSTRATE PROCESS

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## PORTFOLIO OPTIMIZATION ILLUSTRATION – FEDERAL IMPLEMENTATION PLAN

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### FIP at SJGS

- Install SCR at SJGS

### New generation sources

- 40 MW Single Axis Tracking Solar PV in 2016



# ANALYZE

## SENSITIVITY AND QUANTITATIVE RISK RESULTS ILLUSTRATION

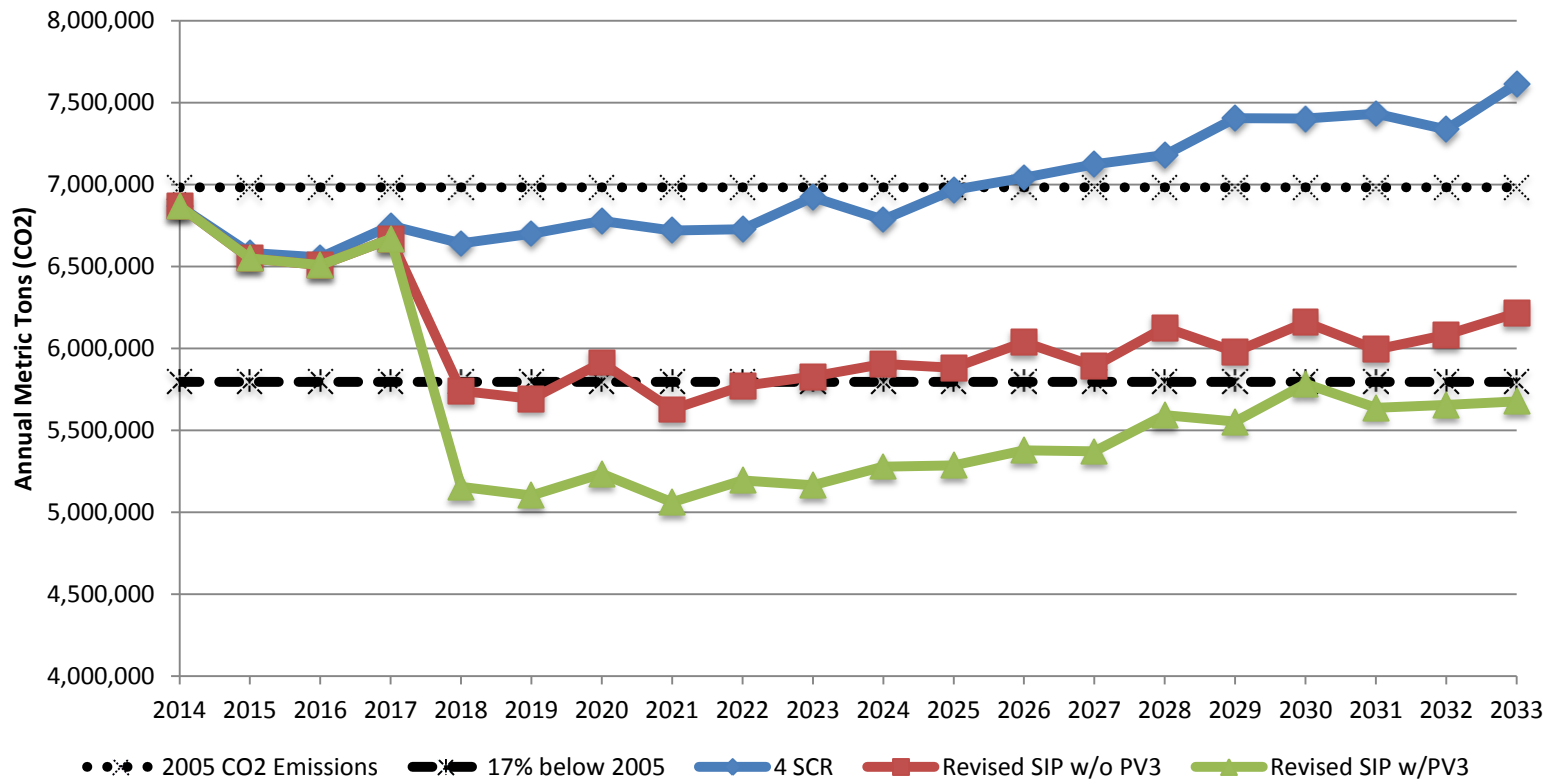
Item (\$Ms)	RSIP w/ PV3	RSIP w/o PV3	4 SCR
Mean 20 Year NPV	\$6,934	\$6,934	\$7,100
5% Risk Tail	\$256	\$310	\$278

Notes:

- Gas and carbon prices based on reference case
- All portfolios include La Luz and 2014 REPP resources
- PVNGS 3 in at \$3,350/kW

# ANALYZE

## QUANTITATIVE RISK RESULTS ILLUSTRATION – CO2 REDUCTION IN PNM'S PORTFOLIO



# REMAINING ANALYSIS

## PORTFOLIO MODELING AND RISK ANALYSIS WORK

	RSIP w/ PV-3	FIP	RSIP w/o PV-3
Load	High/Mid/Low	Mid	Mid
Gas/Carbon	High/Mid/Low	High/Mid/Low	High/Mid/Low

Additional cases to run on RSIP w/PV-3 Mid Load and Mid gas/carbon prices:

- Energy efficiency sensitivity
- Technology Breakthrough scenario
- Transmission investment scenario
- \$0/\$8/\$20/\$40/metric ton CO2 pricing sensitivities
- Water lack of availability sensitivity
- High wind penetration sensitivity

# Thank you



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**MAKE SURE WE HAVE UP TO DATE CONTACT INFORMATION FOR YOU**

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[www.pnm.com/irp](http://www.pnm.com/irp) for documents

[irp@pnm.com](mailto:irp@pnm.com) for e-mails

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