STATEMENT OF NEED: SYSTEM NEEDS AND REQUIREMENTS

MAY 4, 2023

AGENDA

- **Statement of Need**
- **Essential planning requirements**
    - Resource adequacy and reliability
    - Environmental requirements
    - Regulatory requirements
    - Cost minimization
- **Incremental planning requirements**
    - Grid of the past vs. grid of the future, and expectations for a carbon-free grid

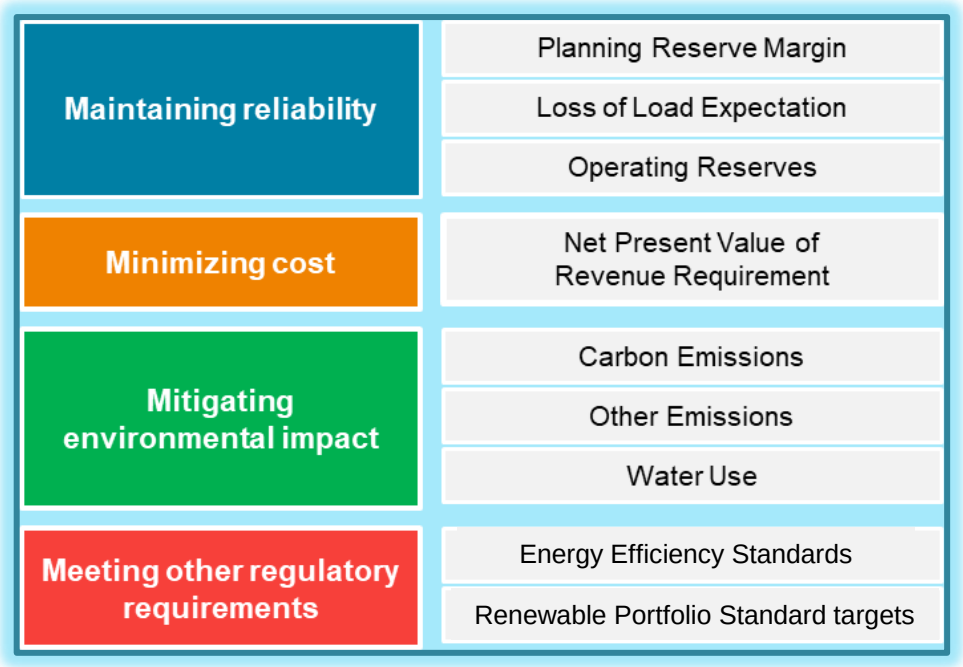
STATEMENT OF NEED

Statement of Need 17.7.3.10

- The statement of need is a description and explanation of the amount and the types of new resources, including the technical characteristics of any proposed new resources, to be procured, expressed in terms of energy or capacity, necessary to reliably meet an identified level of electricity demand in the planning horizon and to effect state policies.
- The statement of need shall not solely be based on projections of peak load. The need may be attributed to, but not limited by, incremental load growth, renewable energy customer programs, or replacement of existing resources, and may be defined in terms of meeting net capacity, providing reliability reserves, securing flexible resources, securing demand-side resources, securing renewable energy, expanding or modifying transmission or distribution grids, or securing energy storage as required to comply with resource requirements established by statute or commission decisions.

ESSENTIAL PLANNING REQUIREMENTS

Planning objectives

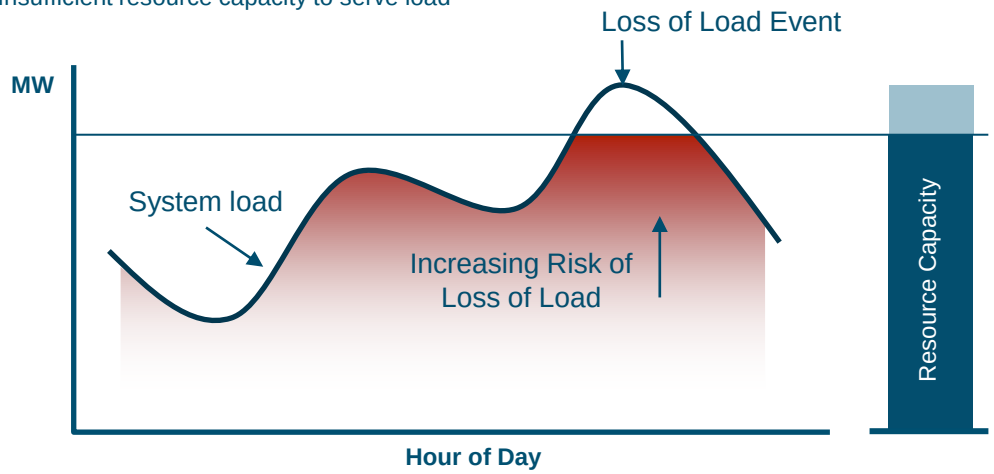


- Modeling framework uses Loss of Load Expectation (LOLE) modeling to calculate resource adequacy requirements and test portfolios for reliability
- In addition to energy and demand requirements, environmental and regulatory requirements dictate modeling inputs for capacity expansion and production cost modeling

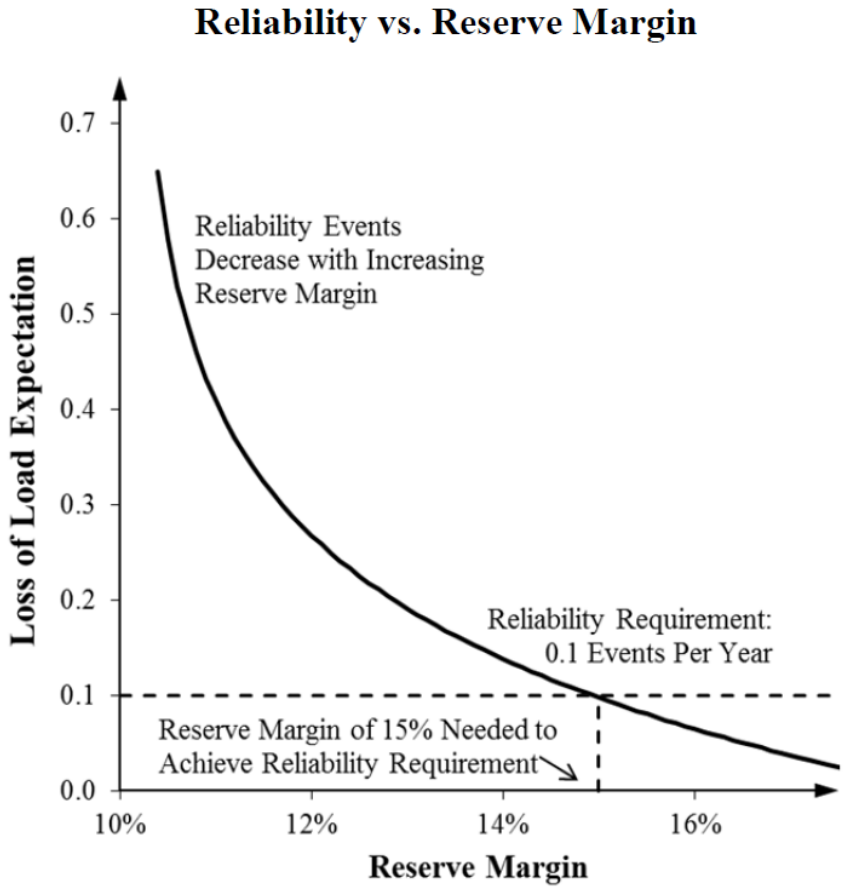
WHAT IS RESOURCE ADEQUACY?

Loss of Load Example

Insufficient resource capacity to serve load



PNM targets:
0.1 LOLE
16% PRM



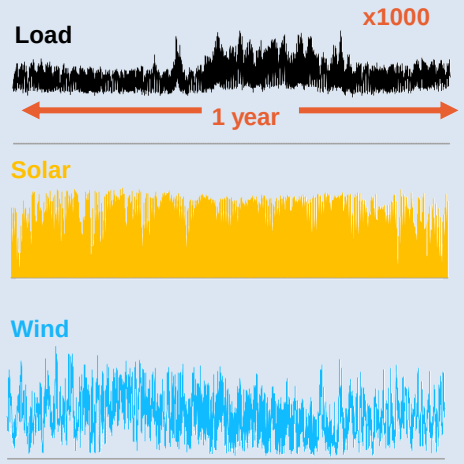
NERC Definition of Resource Adequacy:

"The ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements."

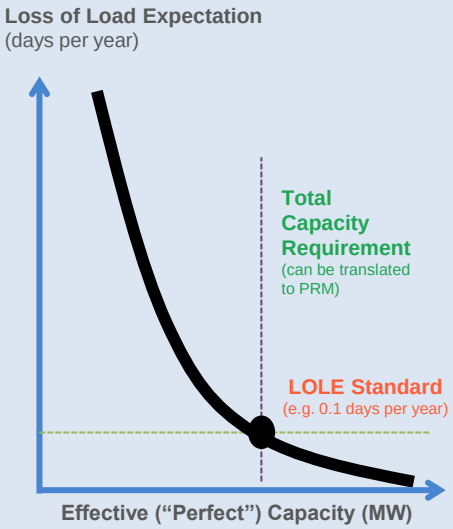
Source: NERC Glossary of Terms

BEST PRACTICES IN RESOURCE ADEQUACY ANALYSIS

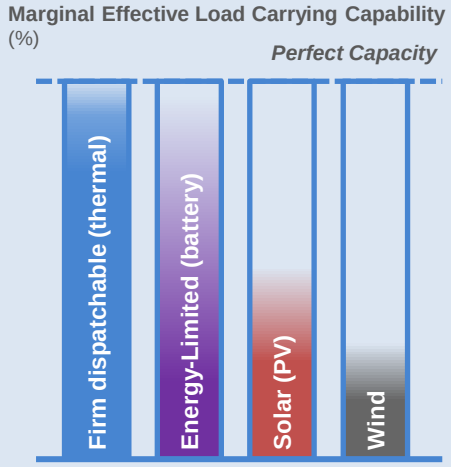
Loss of Load Probability modeling evaluates resource adequacy across all hours of the year



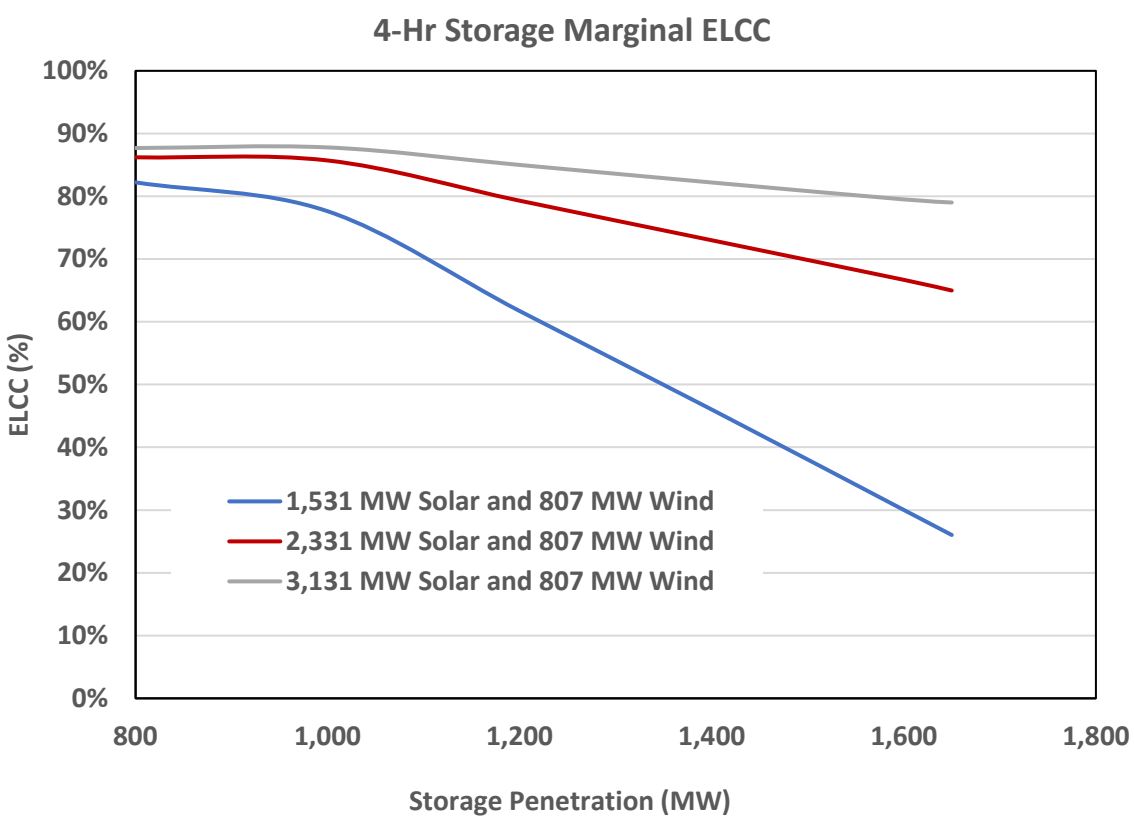
Amount of perfect capacity needed to achieve the desired level of reliability is identified

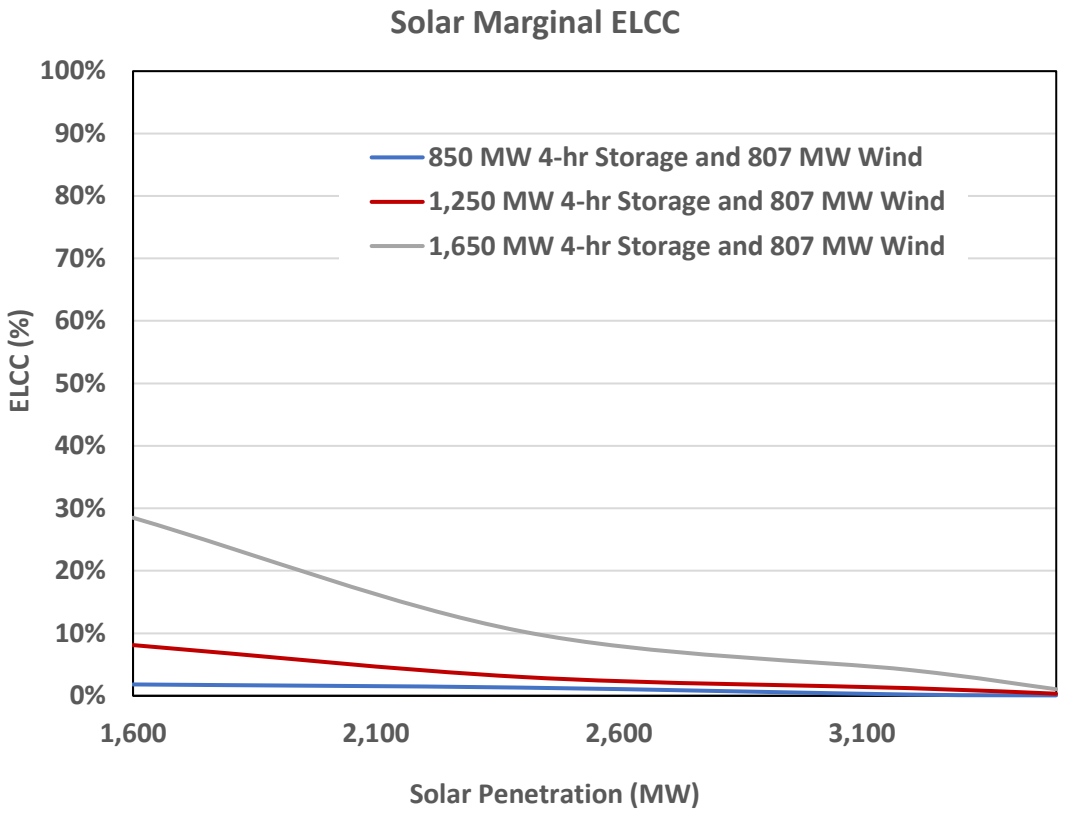


Effective Load Carrying Capability is calculated based on resource contributions to reliability



SUMMARY OF SELECTED ELCCs



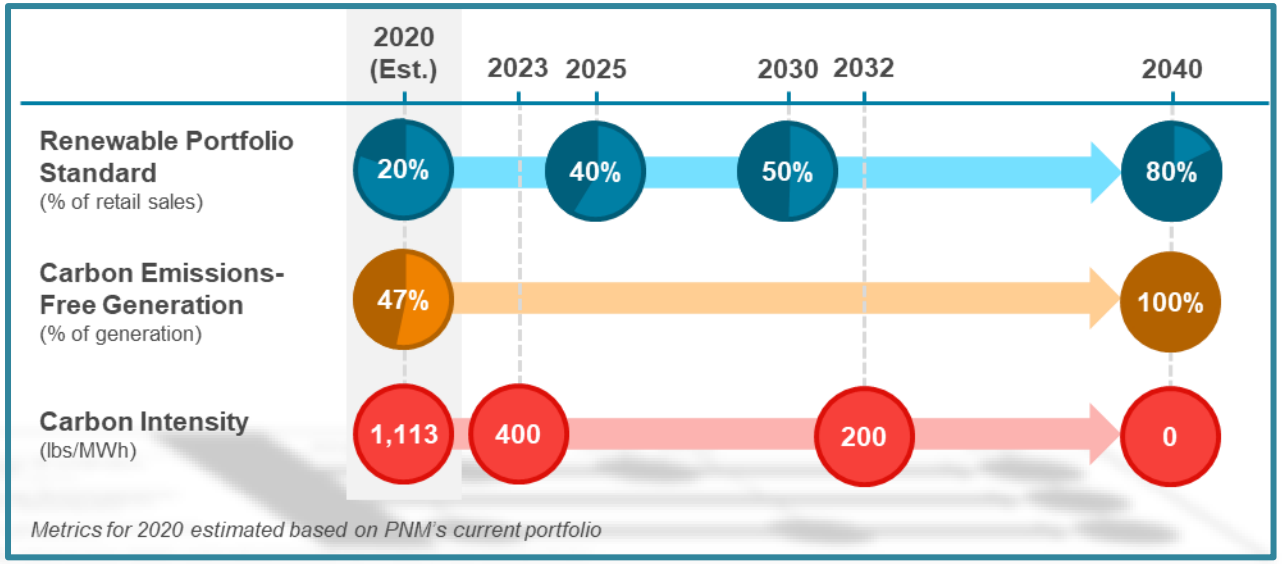


Modeled ELCCs must reflect installed capacities and interaction effects between resources – ELCCs are outputs of reliability modeling and inputs into the capacity expansion model

ENVIRONMENTAL REQUIREMENTS SET BY NEW MEXICO ENERGY TRANSITION ACT

In 2019, the governor signed into law the Energy Transition Act (ETA), which established significant long-term targets for utilities within the state:

- By 2040, all retail sales must be supplied by 80% renewable generation; and
- By 2045, all retail sales must be supplied by 100% carbon emissions-free generation



ETA requirements are constraints in the capacity expansion optimization and production cost modeling

- Other environmental metrics are tracked and reported, though they do not provide constraints for EnCompass capacity expansion optimization and production cost modeling
  - Emissions: CO (carbon), SO2 (sulfur dioxide), NOx (nitrogen oxides), PM 2.5 (fine particles), Hg (Mercury)
  - Water usage

OTHER REGULATORY REQUIREMENTS

Legislation:

- **New Mexico Public Utility Act – 62-3-1 et.seq. NMSA**
  - Establishes that utilities are affected with the public interest and require public regulation and supervision in order to prevent unnecessary duplication and economic waste between utility systems, and provide proper utility services at fair, just, and reasonable rates

- **Efficient Use of Energy Act – 62-17 NMSA**
  - Under the Efficient Use of Energy Act (EUEA), PNM is required to implement load management and energy efficiency programs subject to cost effectiveness as measured using the Utility Cost Test (UCT).
  - The EUEA and subsequent amendments have established energy savings goals for these programs; the most recent amendments in 2019 established goals for 2021-2025 of 5% of 2020 retail sales, or approximately 400 GWh.

- **Energy Transition Act – 62-18 NMSA**
  - Establishes carbon emissions and RPS targets for NM utilities
  - Provides support for communities impacted by coal plant retirements, including mandated deployment of renewable resources in San Juan County

NMPRC Rules:

- **Integrated Resource Plans for Electric Utilities – NMAC 17.7.3**
  - Establishes certain items to be included in IRP report
  - Outlines Facilitated Stakeholder Process
  - Defines Statement of Need and Action Plan
  - Outlines Request for Proposal process and role of independent monitor

- **Renewable Energy for Electric Utilities – 17.9.572 NMAC**
  - Stipulates that each public utility develop an annual Renewable Energy Act plan to comply with RPS standards for a given year, and that demonstrates reasonable and consistent progress toward meeting the RPS
  - Establishes procedures for renewable energy procurement and outlines reasonable cost analysis
  - Lays out guidelines for utility annual renewable energy act plans and cost recovery
  - Outlines means by which compliance is attained and measured

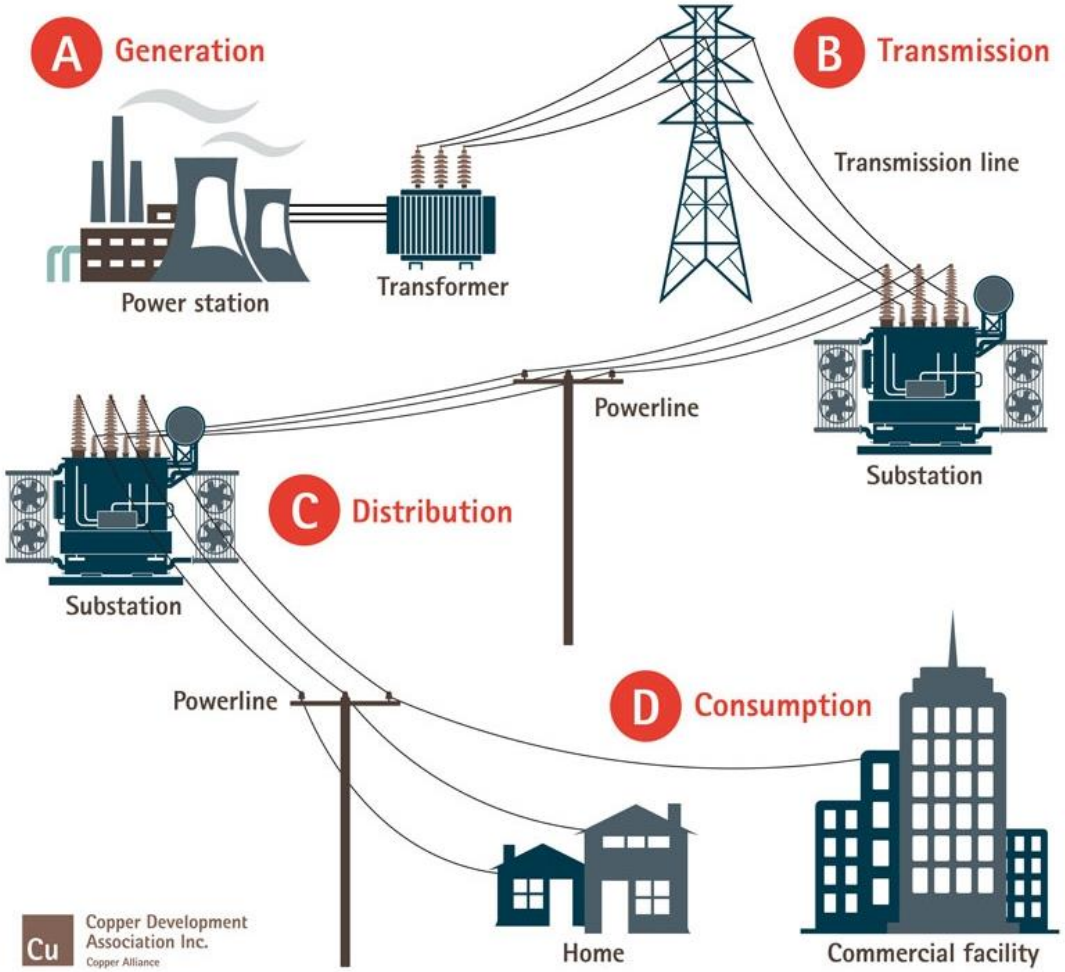
- **Energy Efficiency – 17.7.2 NMAC**
  - Implementation of Efficient Use of Energy Act establishing criteria to evaluate and implement cost-effective measures or programs that reduce energy demand and consumption
  - Specifies how annual program funding is to be determined, how new programs and those previously approved will be cost-effective, and establishes annual incentive criteria
  - Lays out guidelines for different program types, as well as criteria for measurement and verification

COST MINIMIZATION

1. **EnCompass capacity expansion optimization and production cost modeling provide portfolios that meet the following constraints:**
    - Load and energy requirements
    - Reliability requirements
    - Environmental requirements – CO2 intensity and RPS targets
    - Energy efficiency requirements (energy efficiency programs)
2. **Portfolios are then compared on the basis of net present value of revenue requirements (NPV RR); most cost-effective portfolios (MCEPs) are the lowest-cost portfolios that satisfy all requirements**

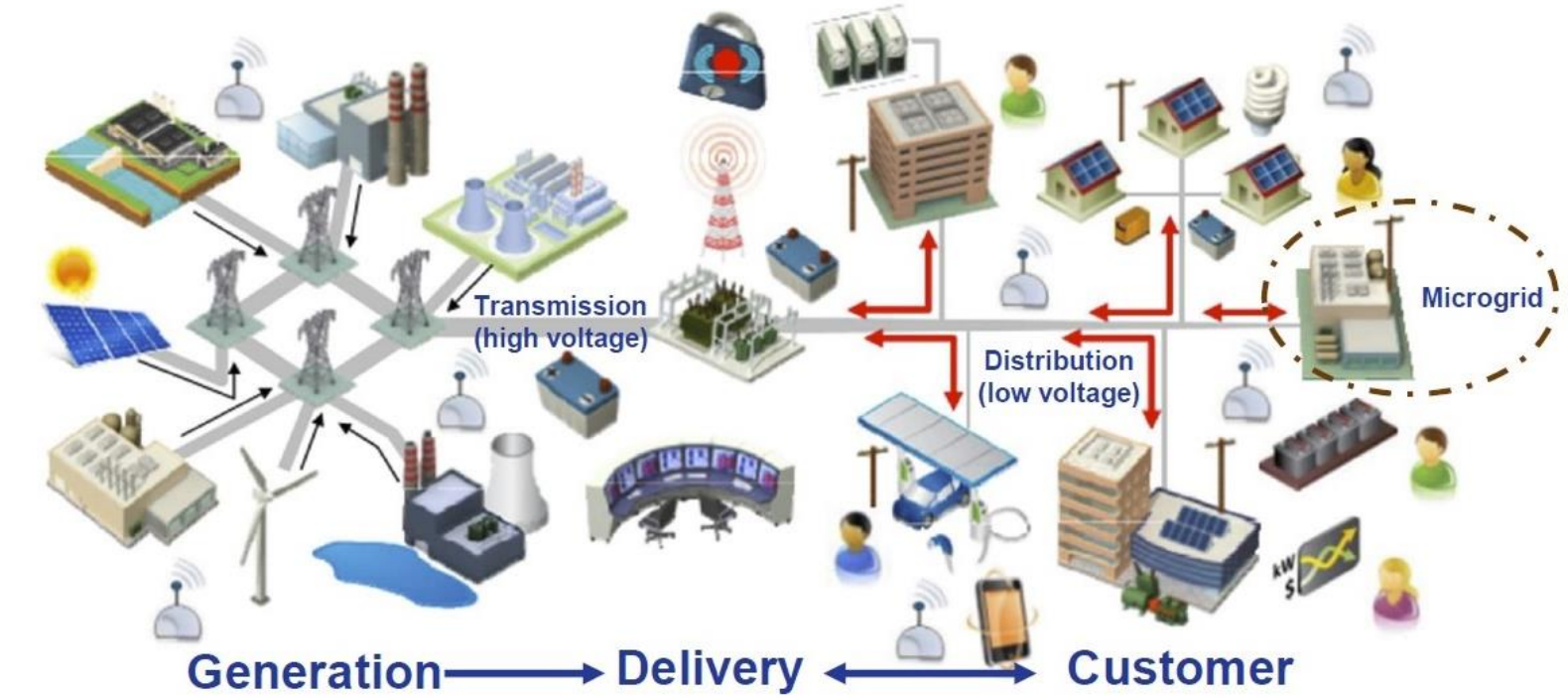
For the 2023 IRP, the 2-3 lowest-cost portfolios will undergo resiliency analysis

THE TRADITIONAL SYSTEM



- Power generated at large central stations and delivered to customers through transmission and distribution system
- PNM has full control and visibility of system
- PNM balances system by matching generation to load
- Traditional generators are fully dispatchable and provide grid services along with energy

TOMORROW'S GRID: A GRID OF GRIDS



Source: "The Future of the Electric Grid and the Role of Energy Storage" Electric Power Research Institute, May 24, 2016

PNM expects a carbon-free grid to be:

1. Sustainable
2. Reliable
3. Resilient
4. Affordable