

TEP Integrated Resource Plan Advisory Council

Presented to

Pima County Environmental Quality Advisory Council

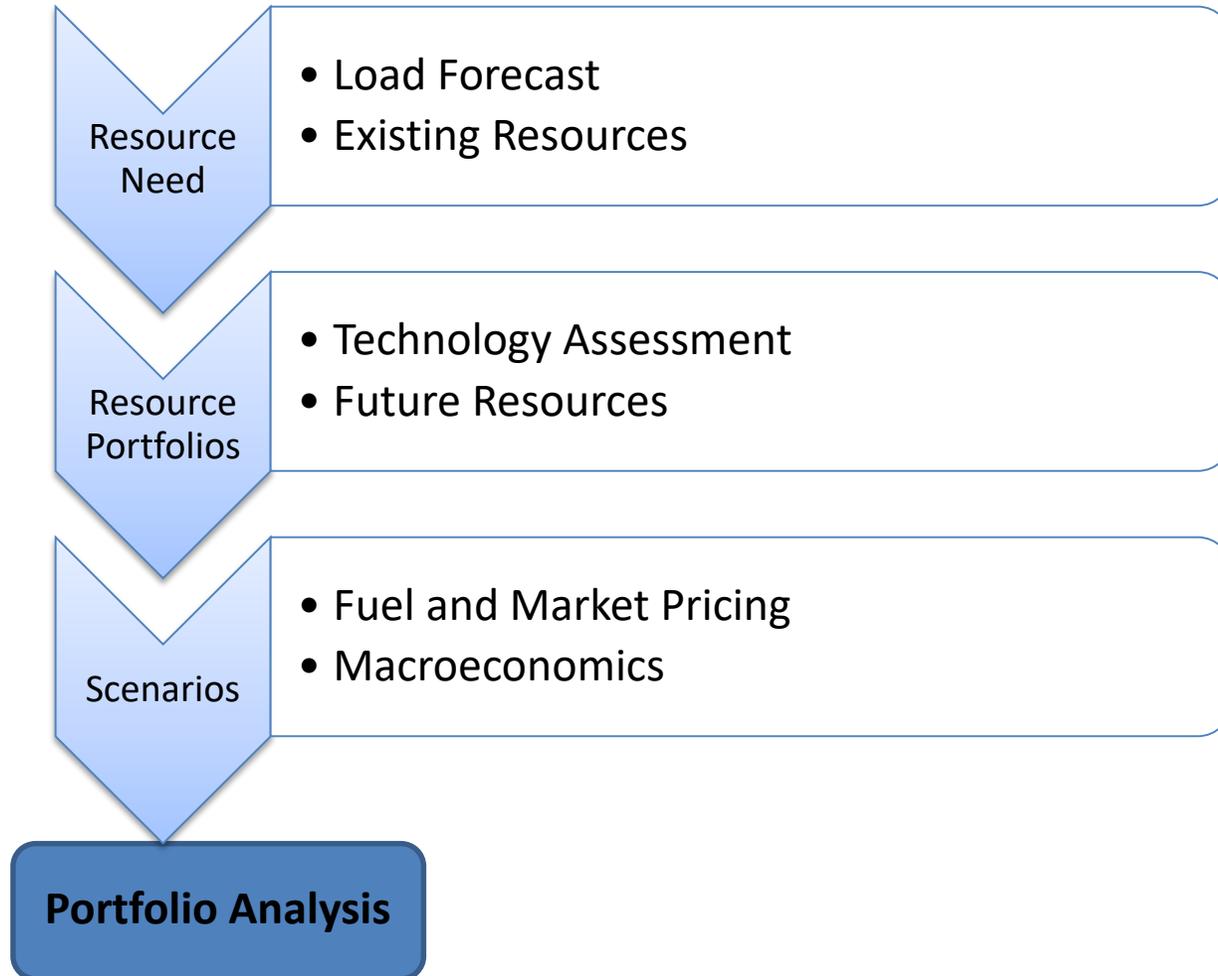
March 3, 2020



Tucson Electric Power



Integrated Resource Plan (IRP) Overview



Just a Plan

- Additional steps needed for specific actions
- Must be regularly updated

Timing

- 3-year planning cycle
- 15-year outlook
 - 2020-2035



Advisory Council Objectives



- Balance
- Deep Dive on Each Topic
- Transparency



Advisory Council Participants

	Category	Organization
Customers	Large/Industrial	Port of Tucson
	Commercial	GLHN, Architects and Engineers
	Residential	RUCO
	Low Income	Wildfire AZ
	Senior	Pima Council on Aging / AARP
Government	City	City of Tucson
	County	Pima County
	State	University of Arizona
	Federal	Davis Monthan AFB
Advocacy	Environment	Sierra Club / Western Resource Advocates
	Energy Efficiency	SWEEP
	Economic Development	Sun Corridor
	Distributed Generation	Technicians for Sustainability



Structure and Topics

- Monthly Meetings
 - May through December 2019
- Subject Matter Experts
 - Including guests
- Meeting Materials Posted Online
 - Presentations
 - Meeting Summary
 - <https://www.tep.com/resource-planning/>

Meeting Topics	
Planning for Uncertainty	Modeling Assumptions
Load Forecast	Grid Enhancements
Existing Resource Attributes	Customer Resources
Proposed Resource Additions	Coal Plant Economics
Future Resource Costs	CO ₂ Emission Reductions
Resource Adequacy	Electric Vehicles
Revenue Requirement	Demand Side Management



Input on Portfolios

Baseline Portfolios

- Commissioner Proposed Portfolios
 - 80% to 85% clean energy by 2050 with various interim dates
- Portfolios Identified in the Prior IRP Decision¹
 - Various percentages of fossil fuel, clean energy at peak, forest biomass and energy efficiency
 - Low load growth (<1%) and no load growth
- Portfolio Consistent with Staff’s Third Draft Energy Rules
 - 45% renewable energy by 2035
 - 30% clean energy during “peak” hours by 2035
 - Utilities develop cost effective paths toward goals through implementation plans

Advisory Council Portfolios

- Higher reserve sharing portfolio
- Early coal retirement
 - Including “take or pay” penalty
 - 2025, 2030, 2035
- CO₂ emission reductions
 - 26-28% below 2005 levels by 2025
 - Staged Reductions
 - 40-50% below 2005 levels by 2025
 - 50-60% below 2005 levels by 2030
 - 60-70% below 2005 levels by 2035
- Load forecast excluding new mining load
- Large customer buy-through
- Emission-based vs Resource-based standard



Revised IRP Schedule



KEY TOPICS

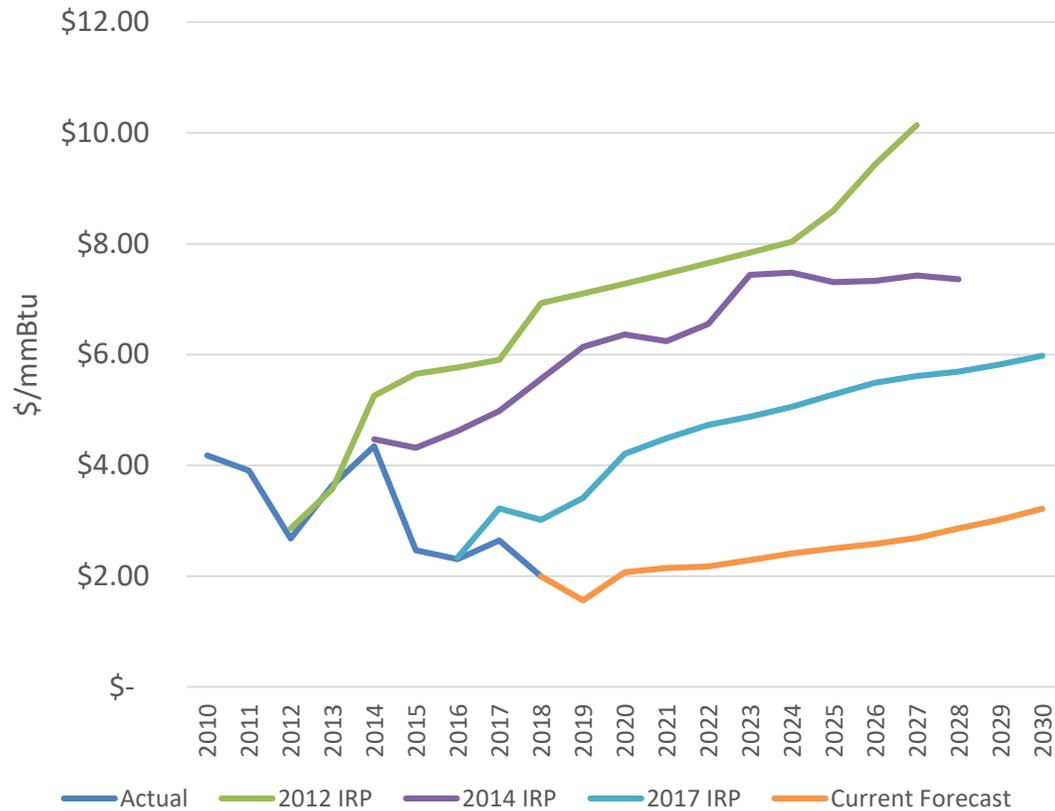


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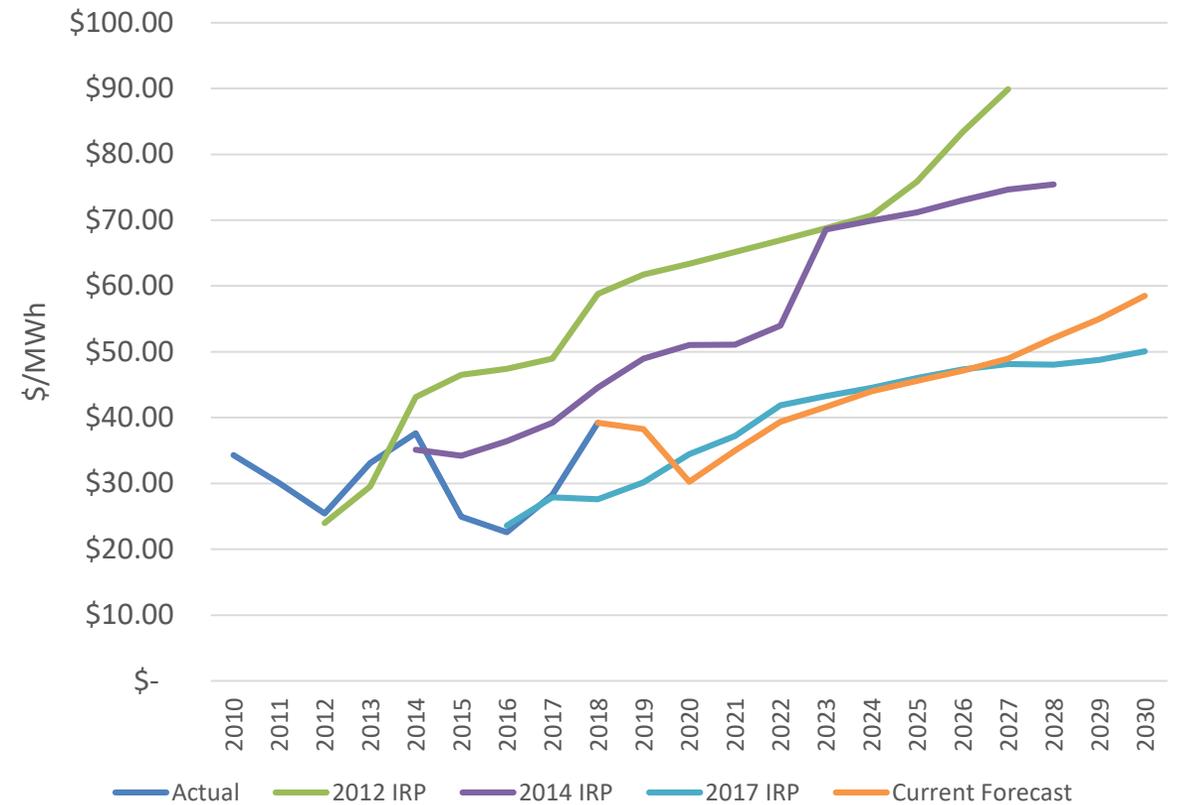


Market Uncertainty

Permian

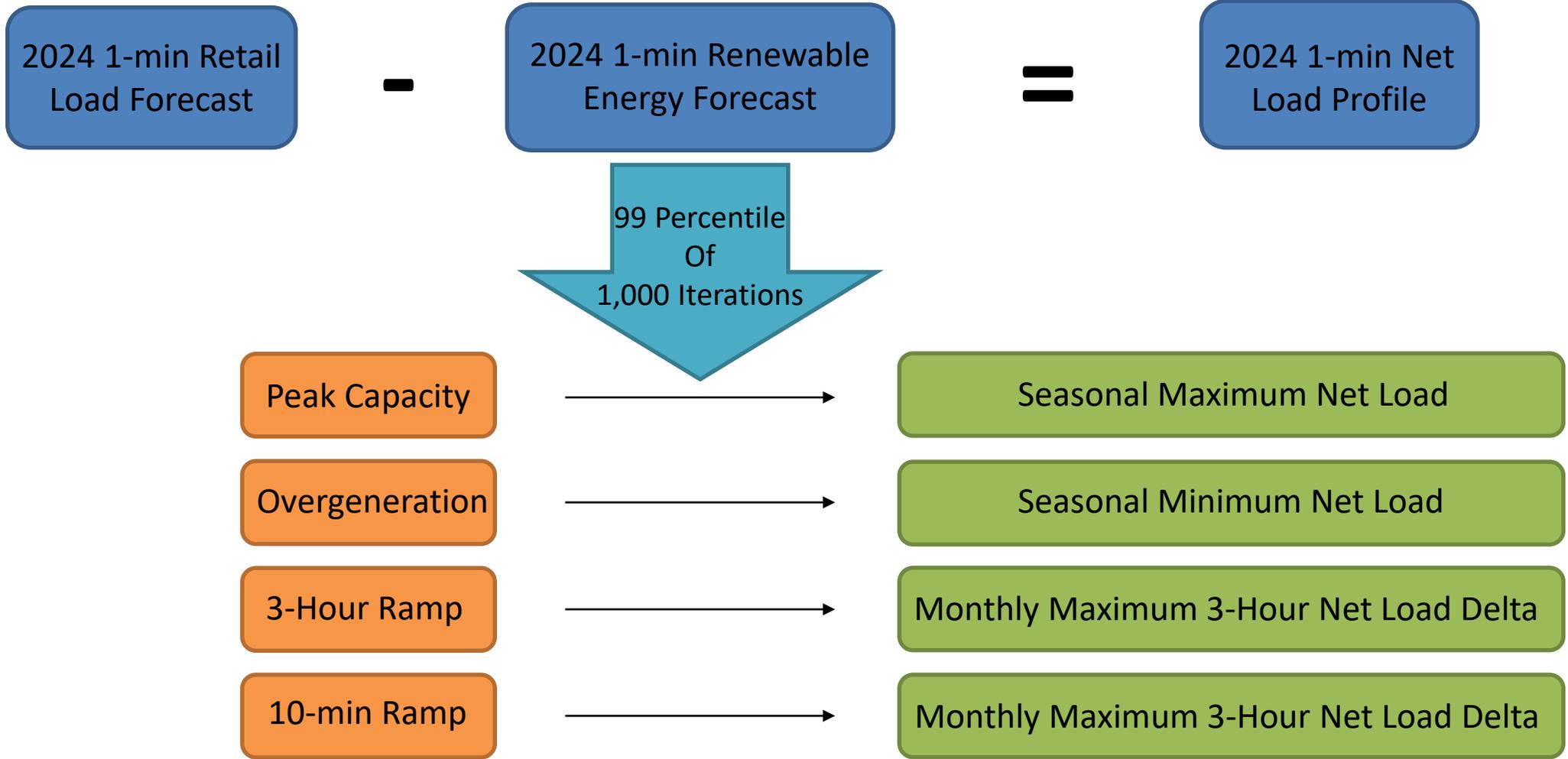


Palo Verde 24x7





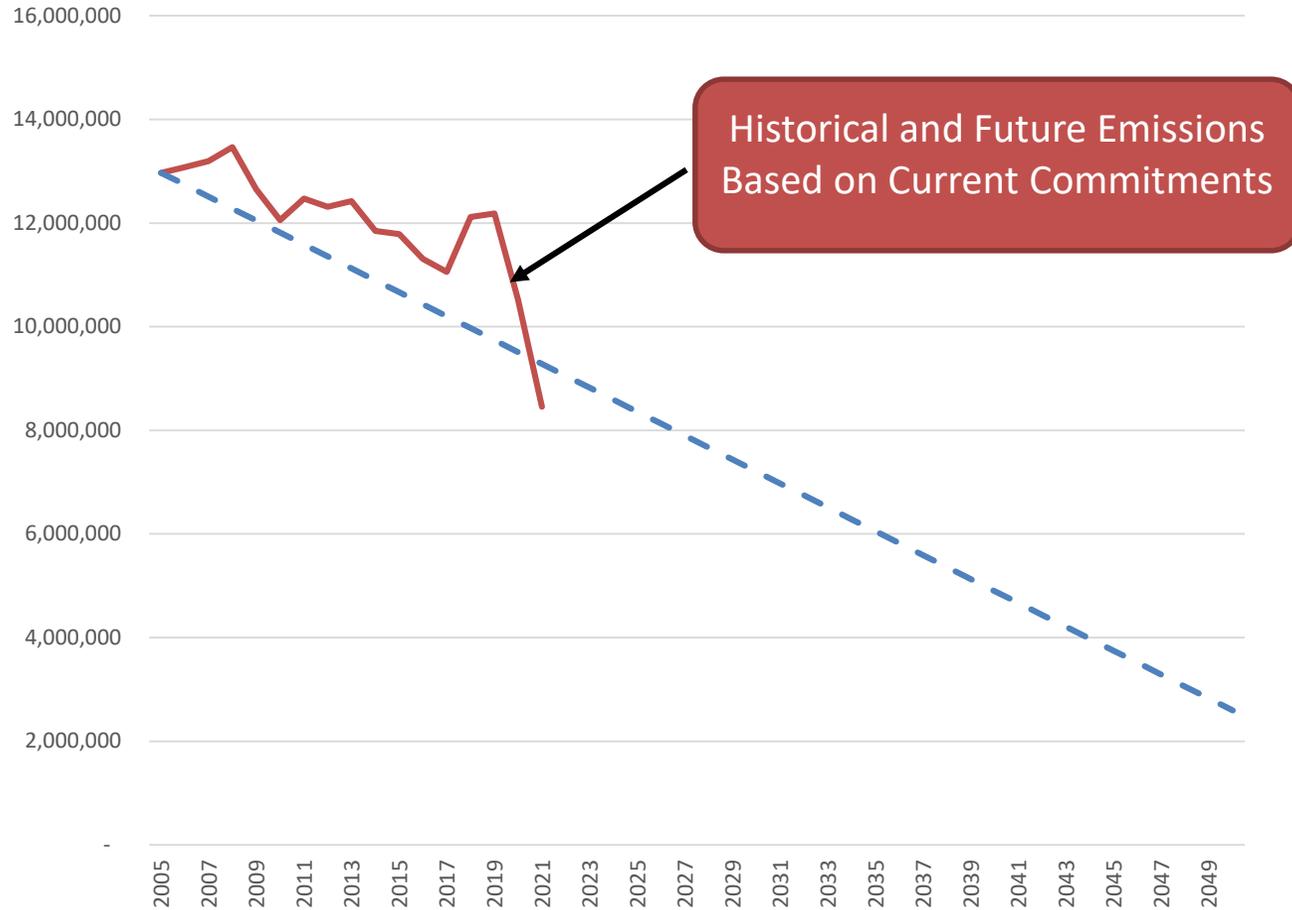
Resource Adequacy





TEP Greenhouse Gas Emission Reduction Goal

Science-Based Targets



THE UNIVERSITY OF ARIZONA
**Institute of the
ENVIRONMENT**

Science-based targets should relate GHG emission reductions to the effect on global temperature change

Paris Agreement targets emission reductions necessary to limit global temperature change to "well below 2°C"

The US Nationally Determined Contribution (NDC) was based on reducing emissions 80% from 2005 by 2050

The 2018 *Special Report: Global Warming of 1.5°C* showed significantly less harm at 1.5°C versus 2°C