Integrated Resource Plan (IRP) Overview

- **Resource Need**
  - Load Forecast
  - Existing Resources

- **Resource Portfolios**
  - Technology Assessment
  - Future Resources

- **Scenarios**
  - Fuel and Market Pricing
  - Macroeconomics

**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
<table>
<thead>
<tr>
<th>Category</th>
<th>Organization</th>
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<tbody>
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<td>Customers</td>
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<td>Large/Industrial</td>
<td>Port of Tucson</td>
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<tr>
<td>Commercial</td>
<td>GLHN, Architects and Engineers</td>
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<td>Residential</td>
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<td>State</td>
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<td>Federal</td>
<td>Davis Monthan AFB</td>
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<td>Advocacy</td>
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<td>Environment</td>
<td>Sierra Club / Western Resource Advocates</td>
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<td>Economic Development</td>
<td>Sun Corridor</td>
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<td>Distributed Generation</td>
<td>Technicians for Sustainability</td>
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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/](https://www.tep.com/resource-planning/)

<table>
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<td>Revenue Requirement</td>
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<td>Demand Side Management</td>
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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 Decision\(^1\)
  - 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
- \(\text{CO}_2\) 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

Kick-off TEP Advisory Council
May 2019

ACC Workshop on Preliminary IRP
September 2019

Final Scheduled Advisory Council Meeting
December 2019

Request to Extend IRP Filing Deadline
February 2020

Final IRP Due
June 2020
Market Uncertainty

Permian

Palo Verde 24x7
Resource Adequacy

2024 1-min Retail Load Forecast - 2024 1-min Renewable Energy Forecast = 2024 1-min Net Load Profile

99 Percentile Of 1,000 Iterations

Peak Capacity → Seasonal Maximum Net Load
Overgeneration → Seasonal Minimum Net Load
3-Hour Ramp → Monthly Maximum 3-Hour Net Load Delta
10-min Ramp → Monthly Maximum 3-Hour Net Load Delta
TEP Greenhouse Gas Emission Reduction Goal

Science-Based Targets

Historical and Future Emissions Based on Current Commitments

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.