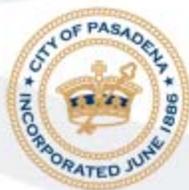




Pasadena Water and Power

Load Analysis for Rate Makers

APPA Conference
Pricing and Market Analysis
September 17, 2018





Pasadena Water and Power

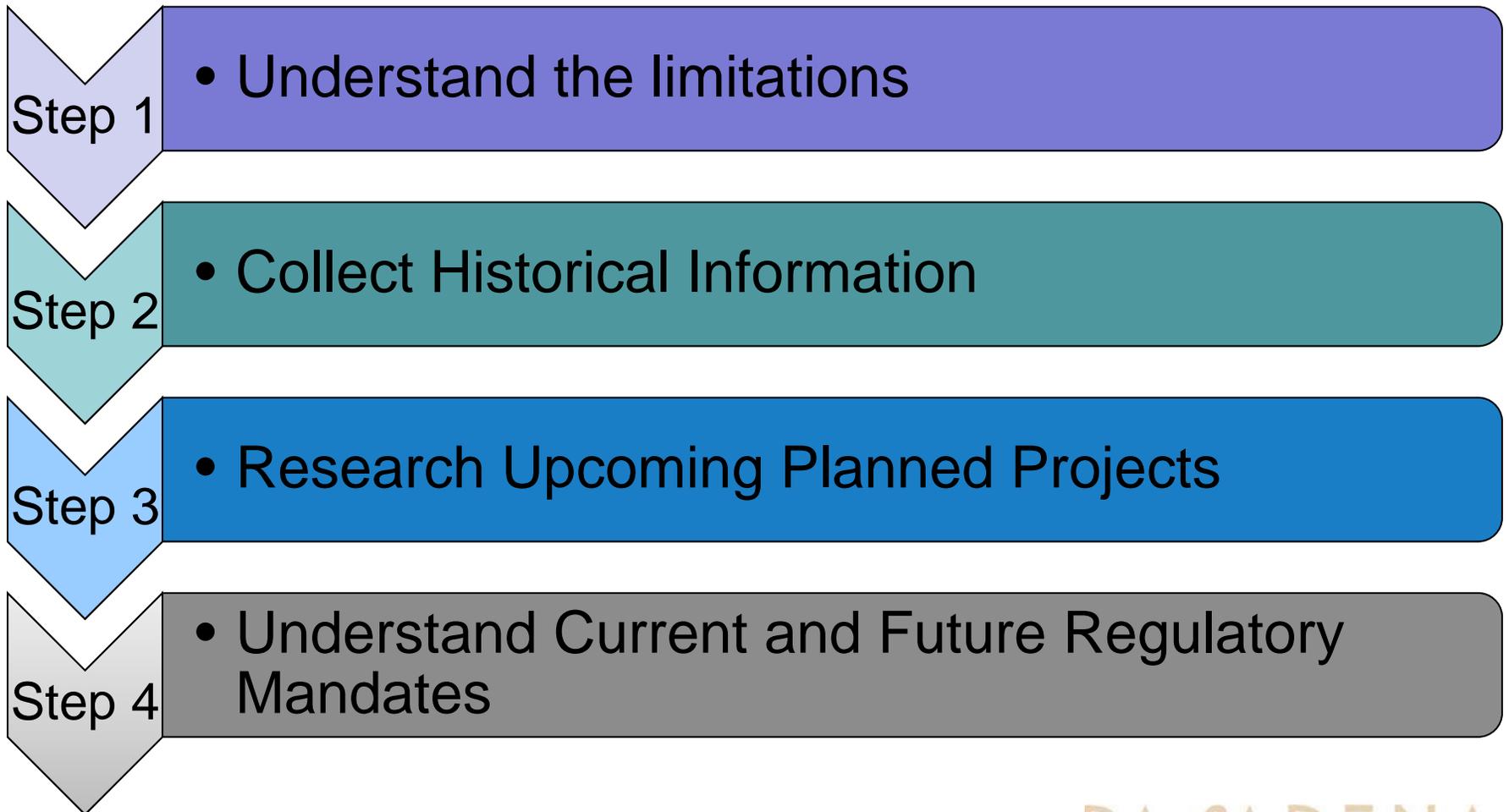
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ROLES AND RESPONSIBILITIES



Load 101

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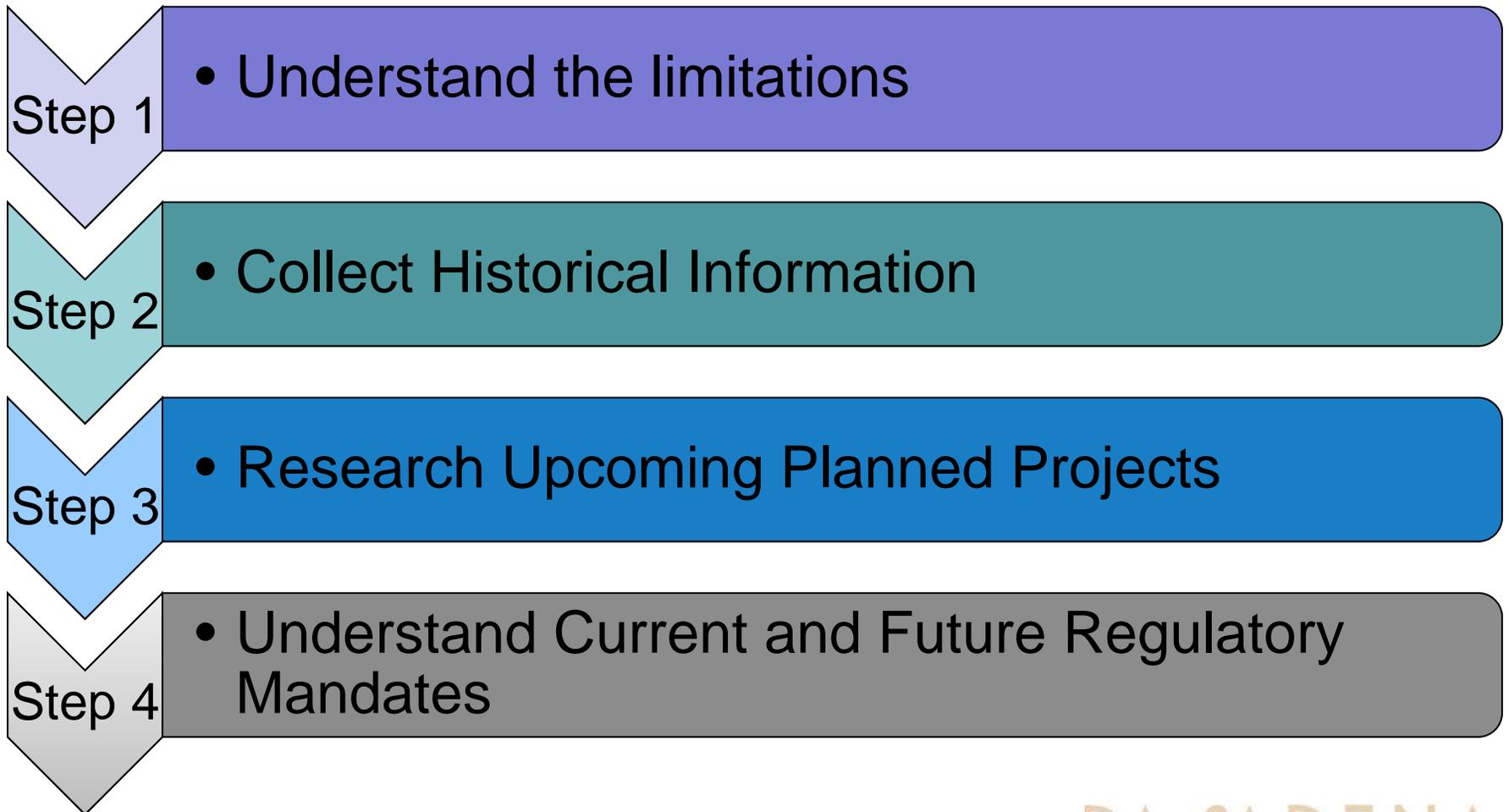
PASADENA WATER AND POWER

UNDERSTANDING YOUR LOAD



Load 101

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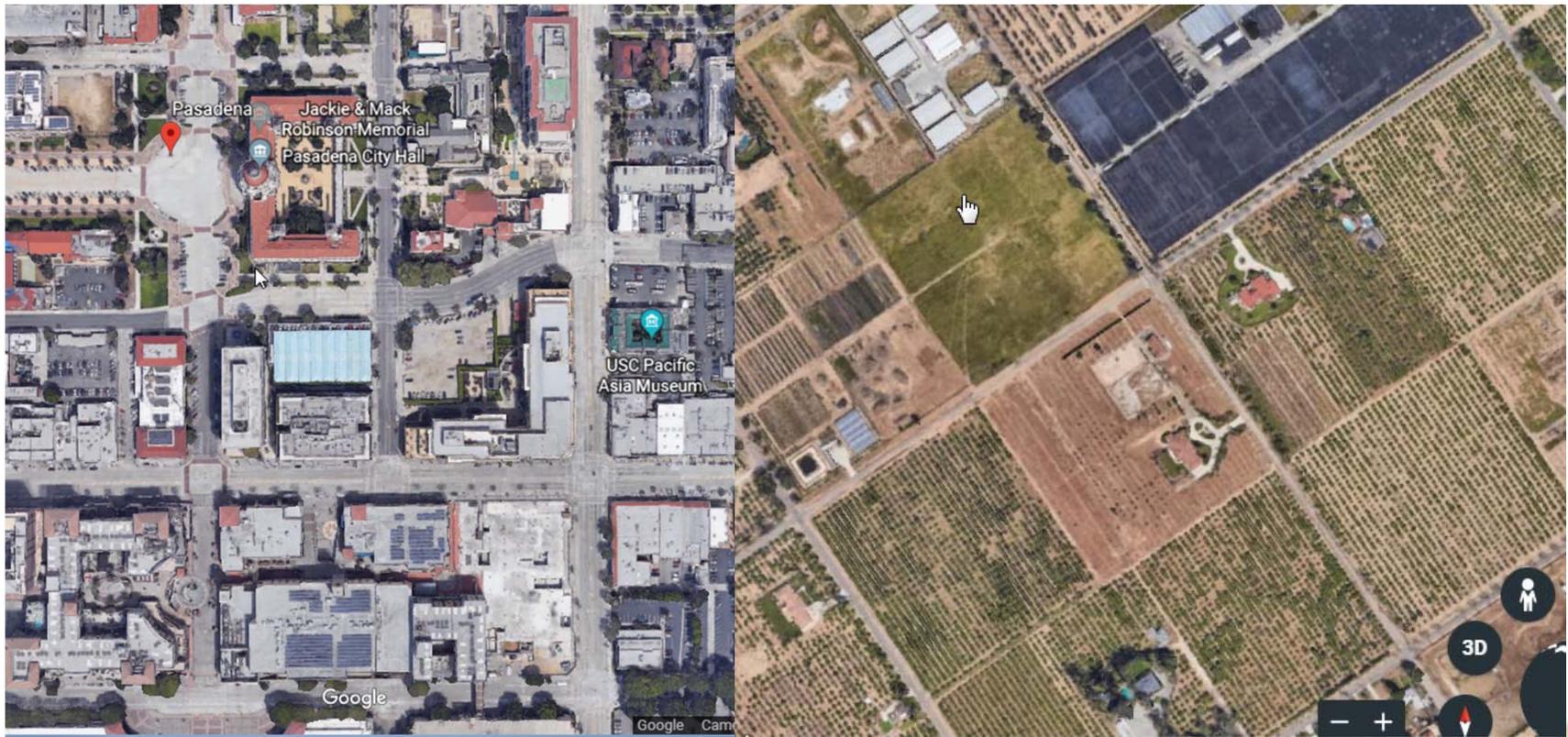




Understand the Limitations

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- Lack of Space
 - > Cities that are built out vs. those aren't



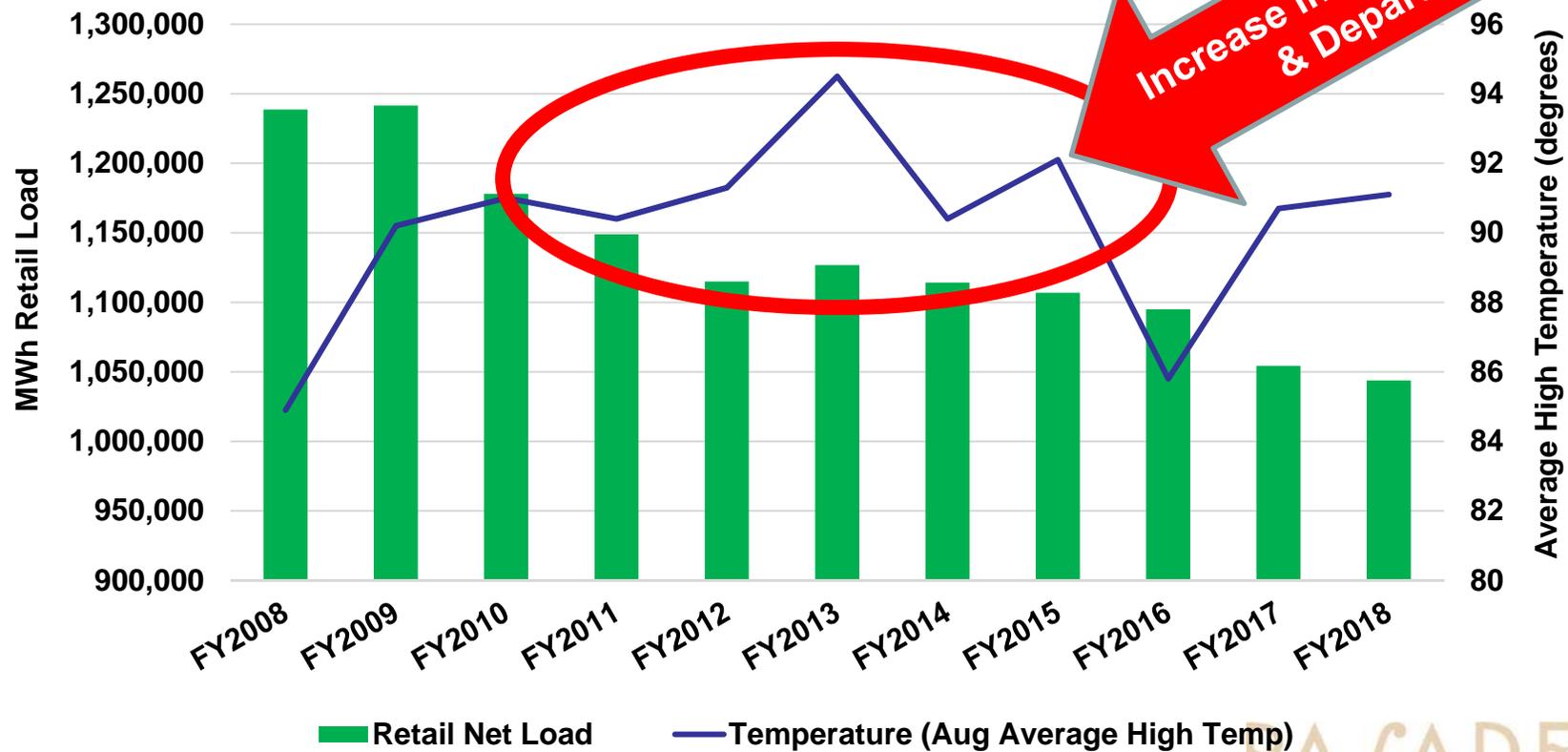


Historical Information & Data

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- Trends with load

Average Retail Load & Average High Temperature



Increase in Solar & EE Rebates & Departing Load

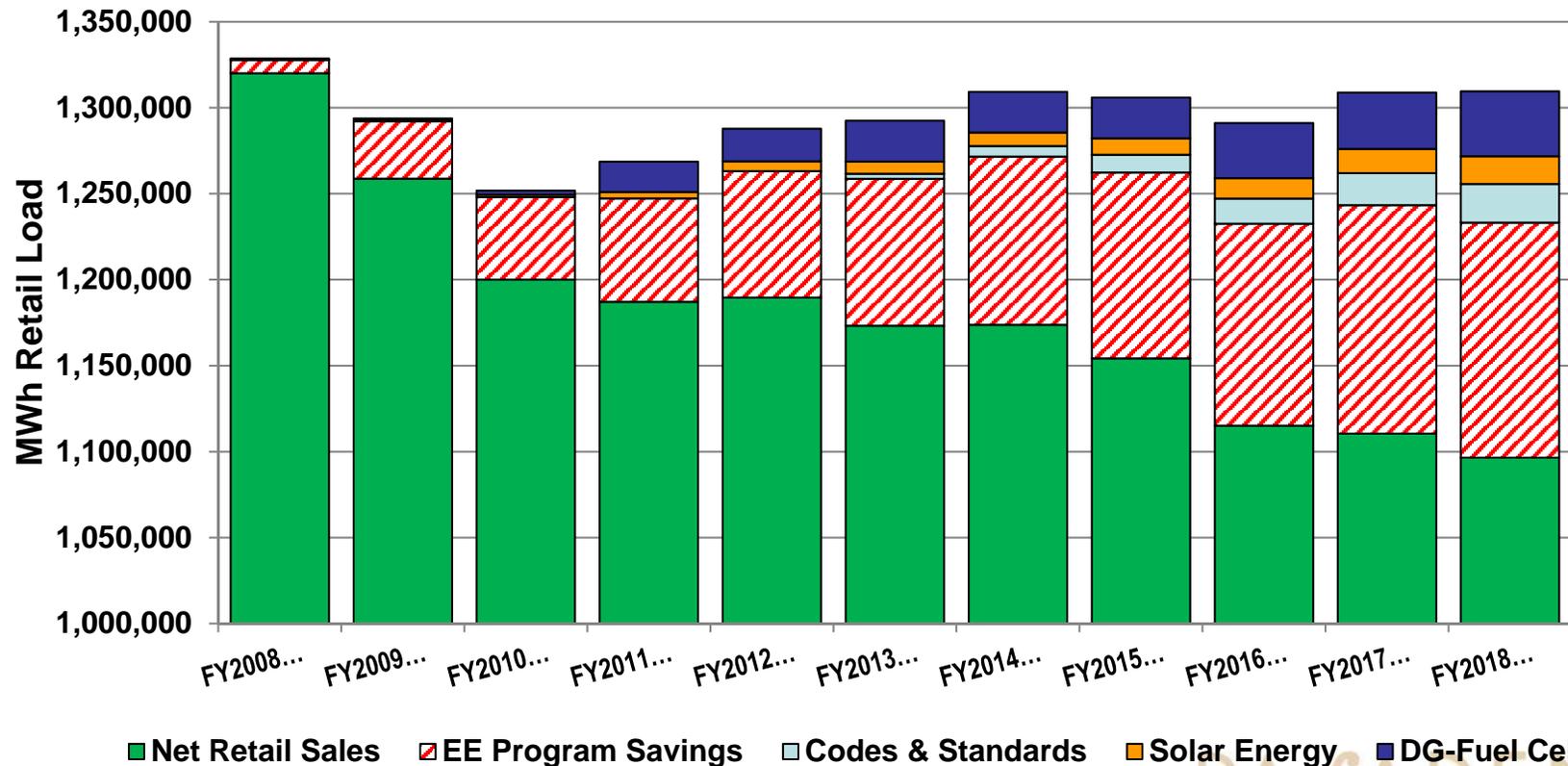


Understanding Historical Load

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- The Real Story

Retail Sales and Sources of Reductions (MWh)





Historical Information & Data

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- How to forecast for variables (weather, economic cycles, etc.)
 - > Variables
 - Population, employment, past energy usage, temperatures
 - > Data Sources
 - U.S. Census
 - Department of Finance
 - Internal Departments (Planning and Finance)



Planned Projects & Other Load factors

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- Work with Planning Department and T/D to identify:
 - > New load (additions)
 - New construction
 - Re-use of property
 - > Departing load (subtractions)
 - Companies departing
 - Demand Side Management
- Transportation Electrification Impacts





Regulations/Mandates (CA)

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- **Transportation Electrification**
 - > Governor's Executive Order
- **SB 1 (2006)**
 - > Implement Solar rebates to encourage solar installations
- **Title 24**
 - > Zero net energy requirements for new construction
 - Commercial by 2030
 - Residential by 2020



Transportation Electrification

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**PWP
Share:
40,000
Cars**



**PWP Potential
Load Growth:
113 GWh**



**Increase in
EV
Incentives**



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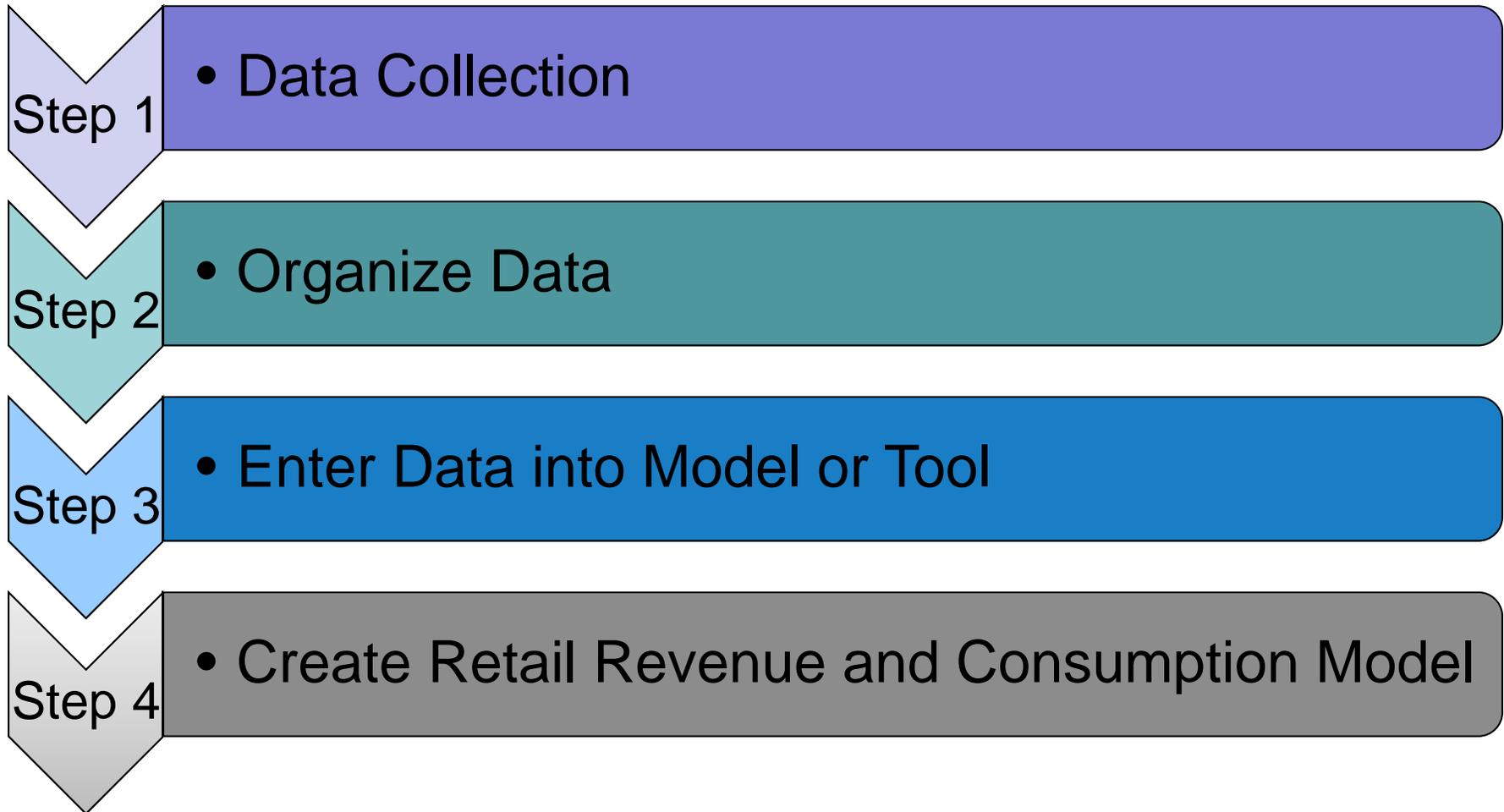
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DEVELOPING LOAD ANALYSIS AND FORECASTS



Steps

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SOFTWARE APPLICATIONS

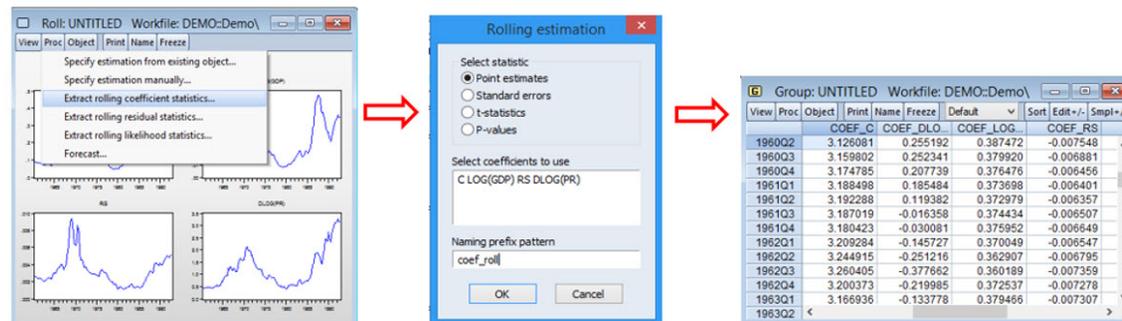


Tools

Pasadena Water and Power

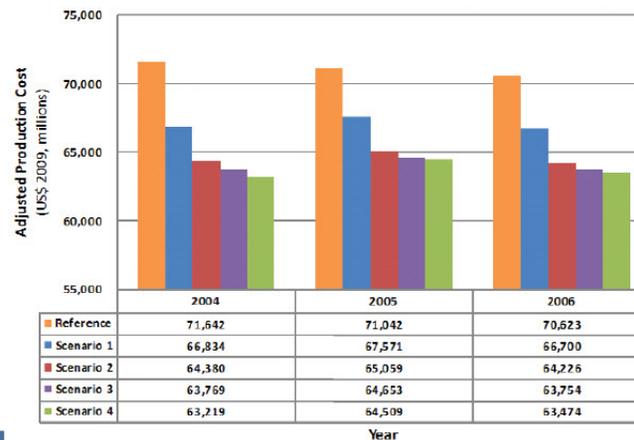
- **Statistical Software**

- > E-Views
- > STATA
- > SPSS



- **Production Cost Model**

- > ABB
- > Plexos
- > Aurora



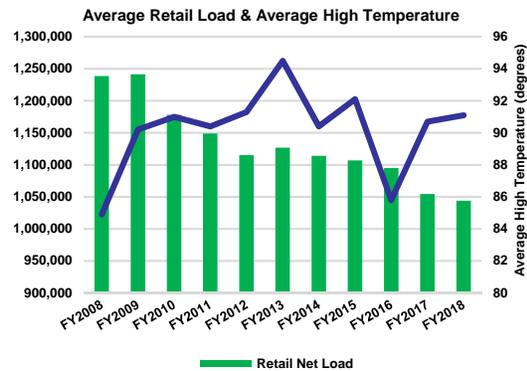
- **Excel**

- > PWP method



Pasadena Forecast

Pasadena Water and Power



PASADENA