

# Exhibit to Agenda Item #1

Board Energy Resources & Customer Services Committee  
Wednesday, August 1, 2018, scheduled to begin at 5:30 p.m.  
Customer Service Center, Rubicon Room

# Discussion Topics

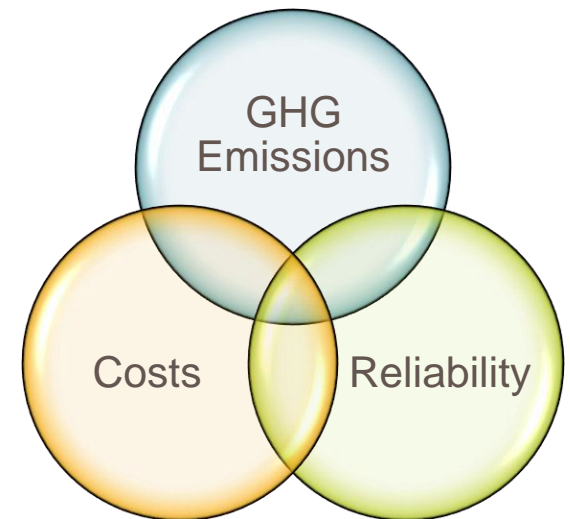
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- IRP Strategy
- Timeline and Public Report
- IRP Options and Findings
- Local and Regional Efforts to Achieve SD9
  - Costs, local reliability, renewable expansion
  - Local investments to reduce GHG
  - Net Zero Portfolio
- Staff Recommendation
- Next Steps in IRP

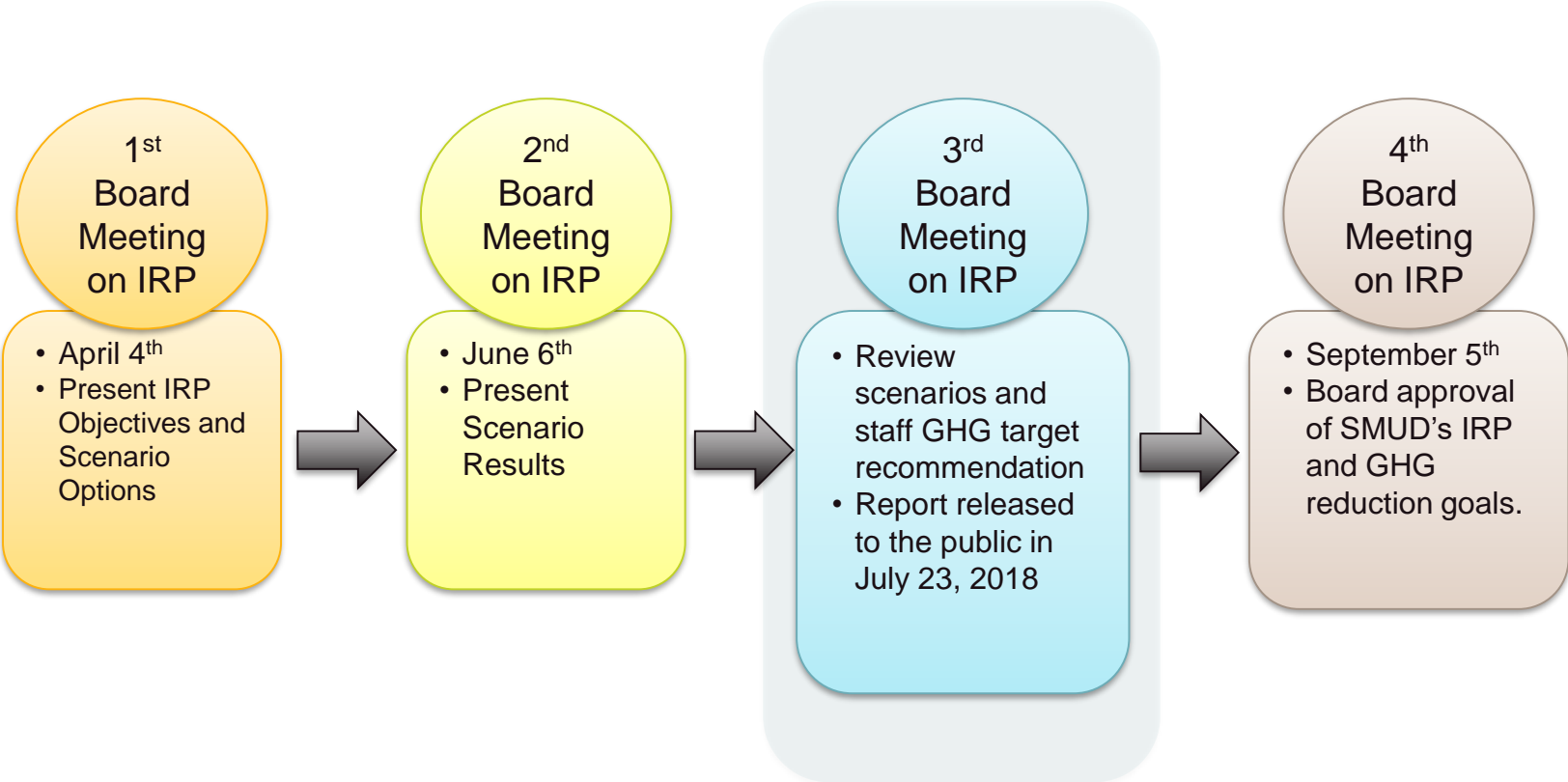
# Integrated Resource Plan (IRP)

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- Strategic objective of the IRP is to evaluate and establish long term (2030,2040, & 2050) carbon targets while considering cost, customer, and reliability impacts
  - Will result in new SD-9 language for long term policy guidance
- Board approved IRP will be filed with the CEC in April 2019
- An IRP is a long-term roadmap for setting high-level goals and a pathway to achieve those goals
  - The IRP is a “living” document that will be revisited to address technology, customer, regulatory, market, reliability, and cost risks



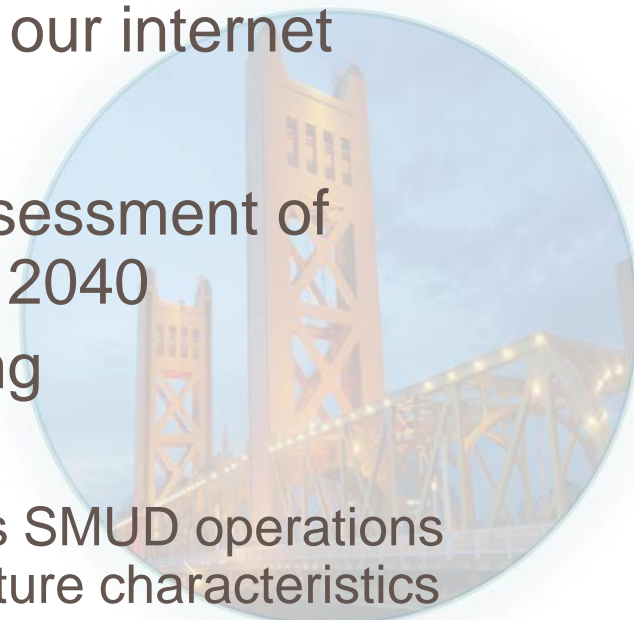
# SMUD's 2018 IRP Timeline



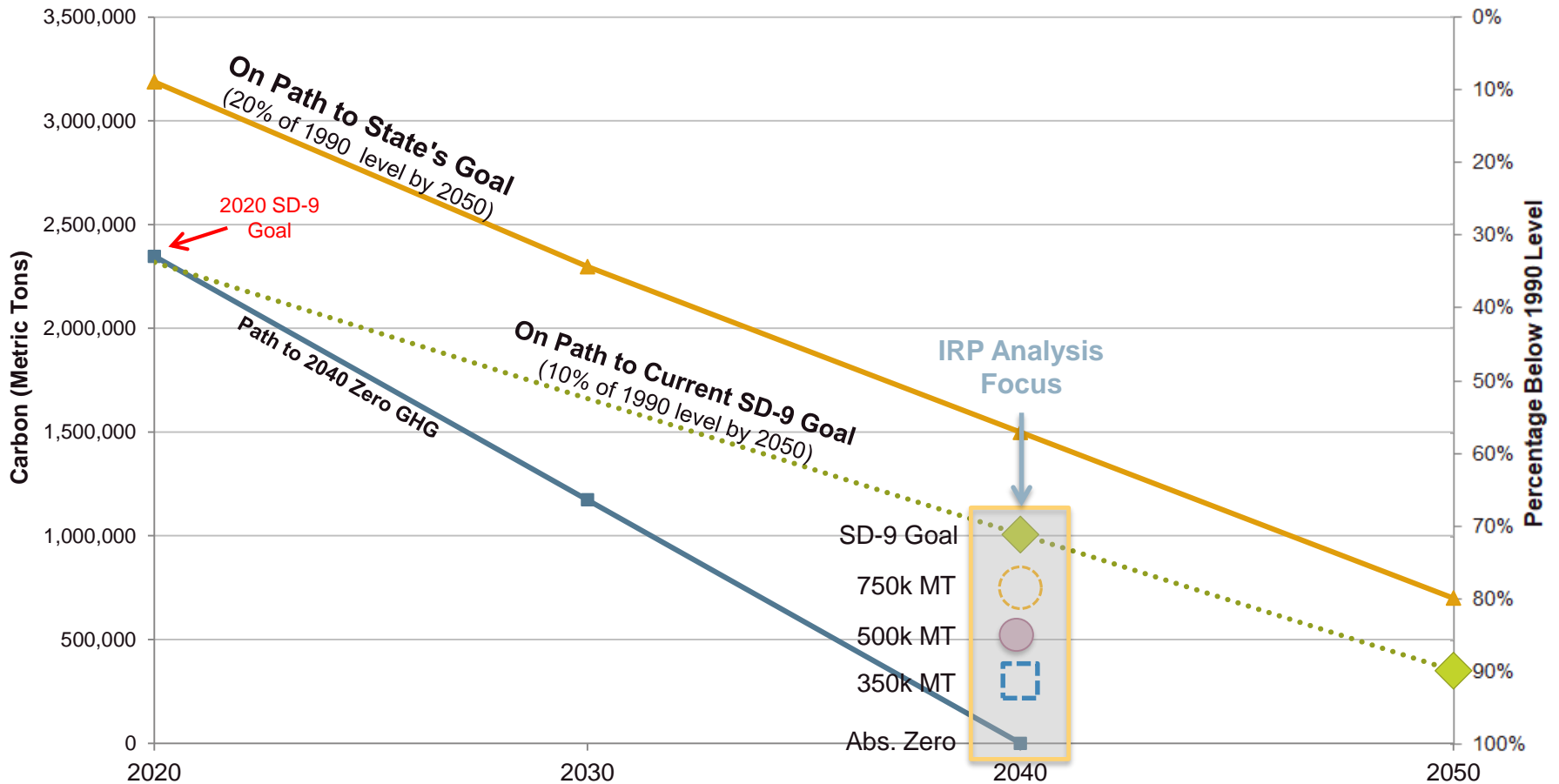
# Public Report

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- Released Monday, July 23, 2018
  - Social media release and posted on our internet
- Provides detail on IRP scenarios
  - High level financial and reliability assessment of different levels of GHG emissions in 2040
  - E3's Resolve and Pathways modeling
  - SMUD modeling using Plexos
    - Plexos is an hourly model that simulates SMUD operations and costs to ensure we identify and capture characteristics specific to SMUD
  - Staff Recommendation

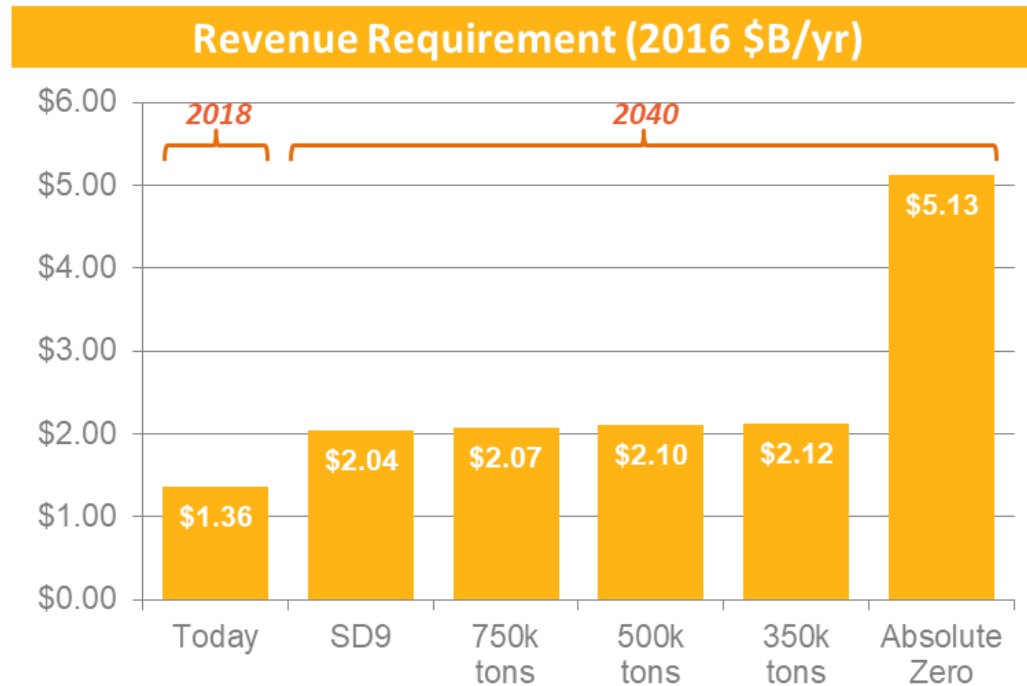


# IRP Scenarios Studied



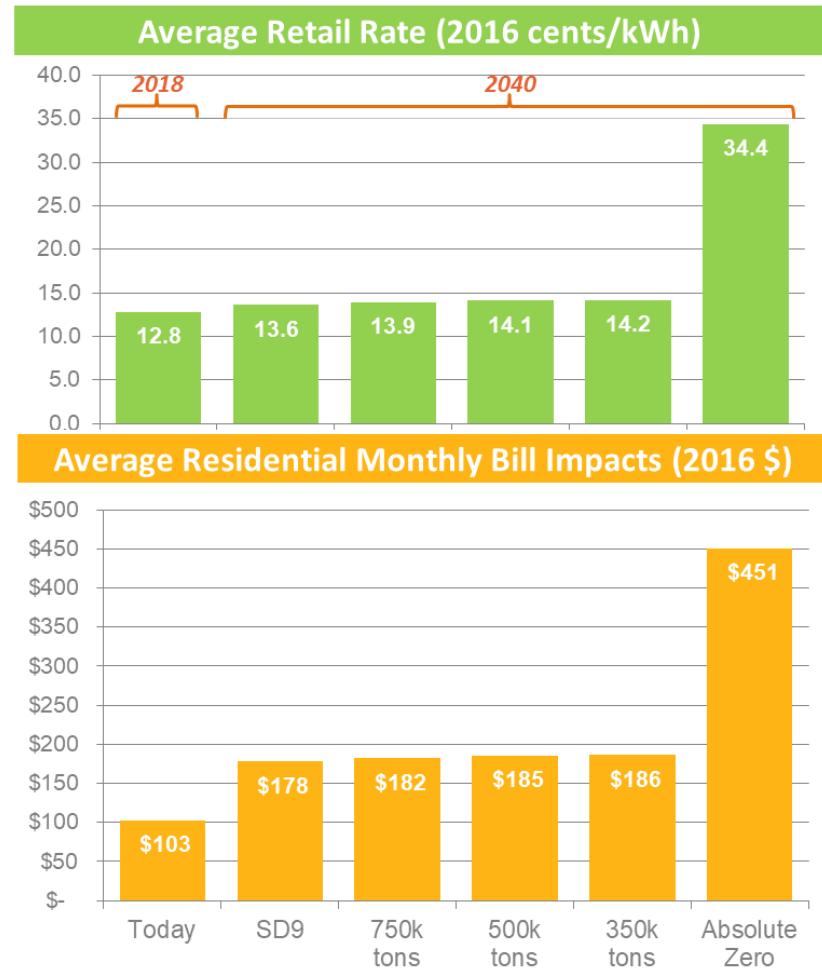
# Key Scenario Study Findings

- Revenue requirements grow by more than \$600 million/yr. by 2040 to achieve SD-9 with 80x50 DERs
- Gas generation fleet necessary to maintain system reliability
  - Gas fleet efficiency helps lower emissions in the state
- Additional local flexible resources will be needed over time for reliability
- Absolute Zero case is cost prohibitive and unreliable
- Accelerating net-zero to 2030 or 2035 adds significant costs and depends on technology maturity and customer adoption
- SMUD's support of California's 80x50 goals drives significant increases in local electrification and reduction in Sacramento area GHG emissions



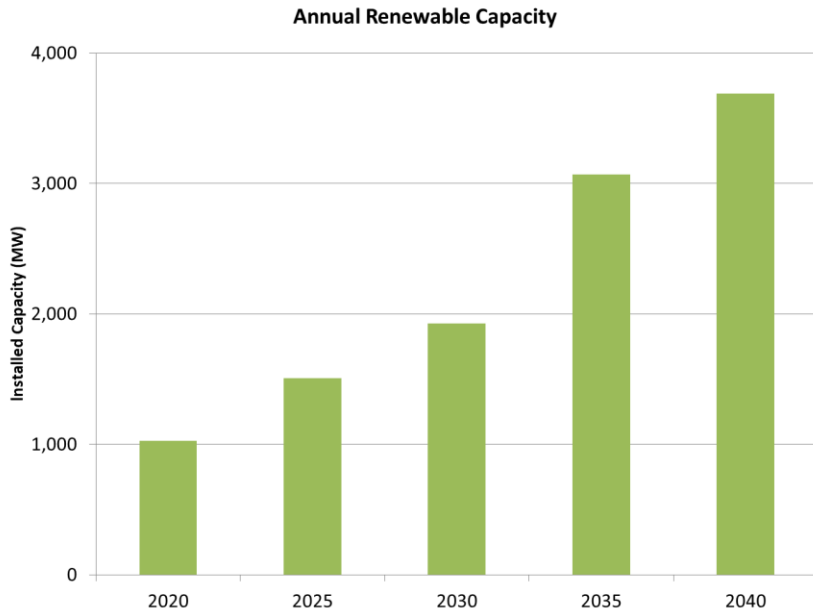
# Key Scenario Study Findings

- Moderate impact to rates due to growth in electric sales
- Average bills likely to increase depending on future pricing and technology
- Rates would increase more significantly with no load growth from 2020-2040

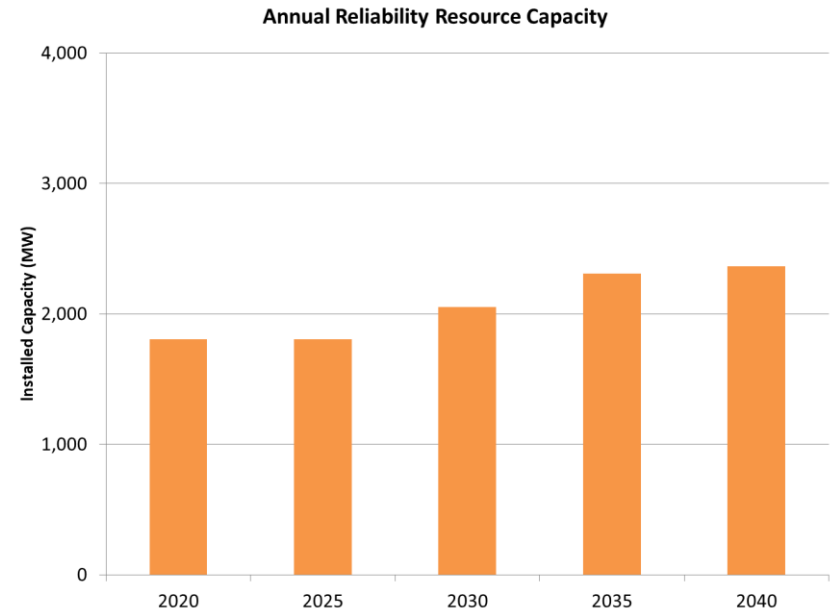




# Local and Regional Efforts to Achieve SD-9 Renewable & Local Reliability Capacity



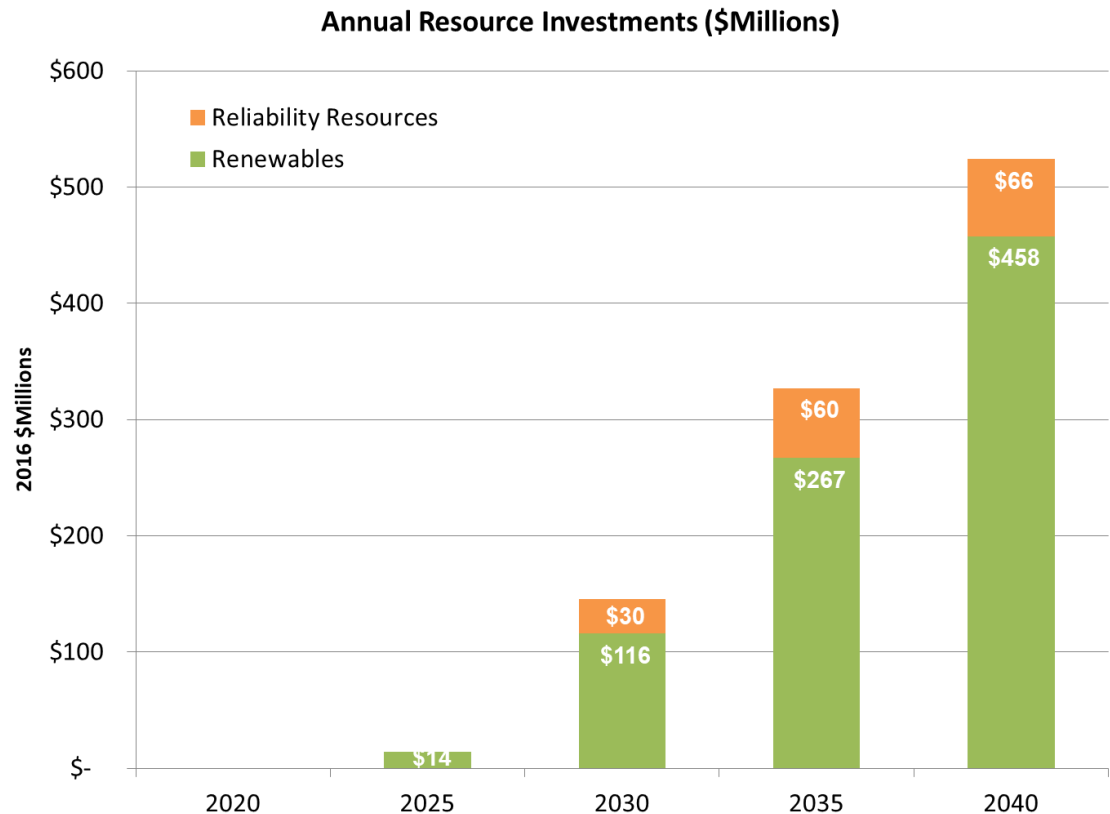
- Renewable capacity more than triples from 2020 – 2040



- ~30% increase in local reliability capacity from 2020 – 2040
- SMUD has not increased capacity this significantly with local reliability resources since building CPP in 2006

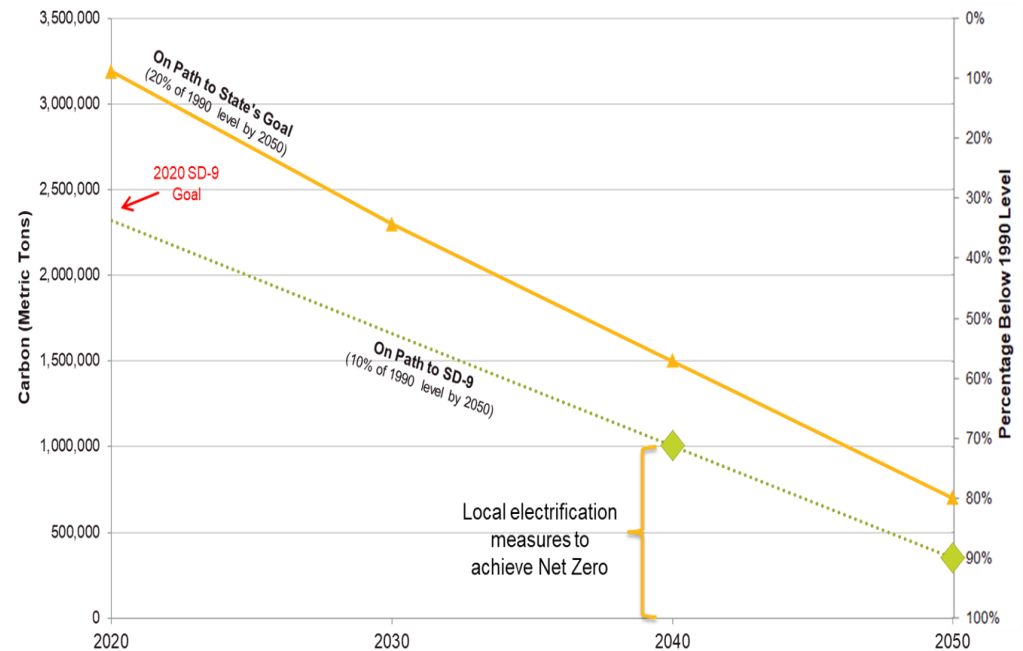
# Local and Regional Efforts to Achieve SD-9 Resource Costs

- Achieving SD-9 will cost over \$500M/yr. more by 2040
  - Most new spending will occur after 2030
  - Does not include non-IRP related operating costs or investments necessary for normal SMUD operations

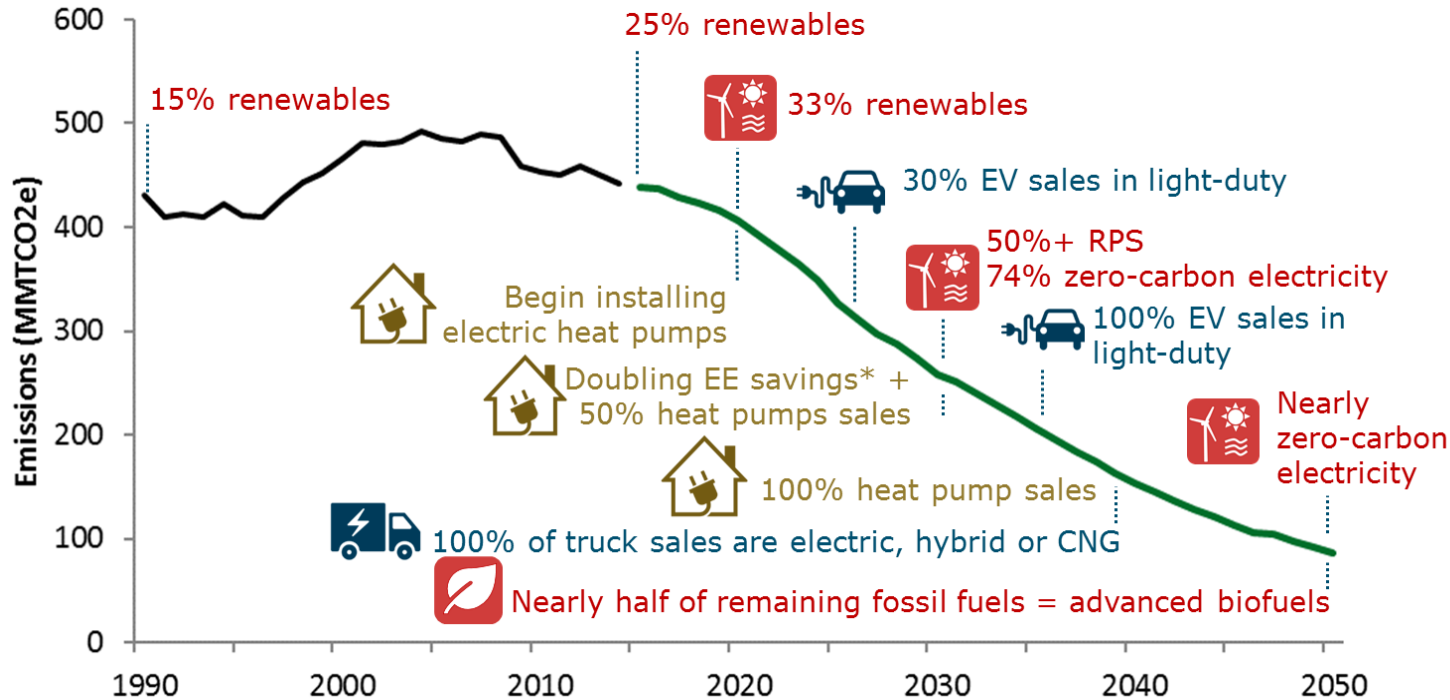


# Net Zero by 2040

- California's 80% below 1990 emissions by 2050 (80x50) requires significant support from electric utilities
  - Transportation electrification and building electrification are major pillars of the California 80x50 plan
- SMUD intends to take action now to support the State's carbon objectives
  - SMUD will make significant local investments in electrification to support the State's carbon reduction goals
  - GHG emissions associated with increased electric sales from electrification are primarily offset through renewables to stay on SD9 pathway
- Net Zero means SD-9 power supply emissions will be offset in 2040 by other carbon reduction measures
  - Under Net Zero, emissions reductions in the transportation and building sectors would offset SD-9 emissions



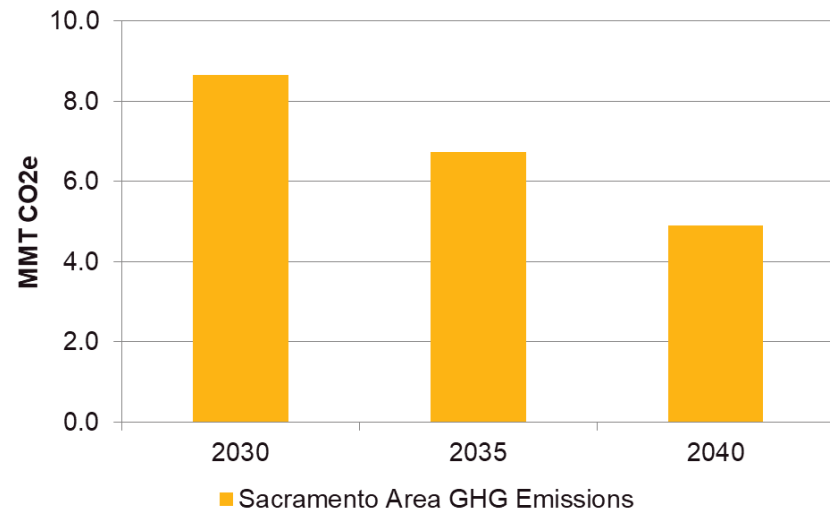
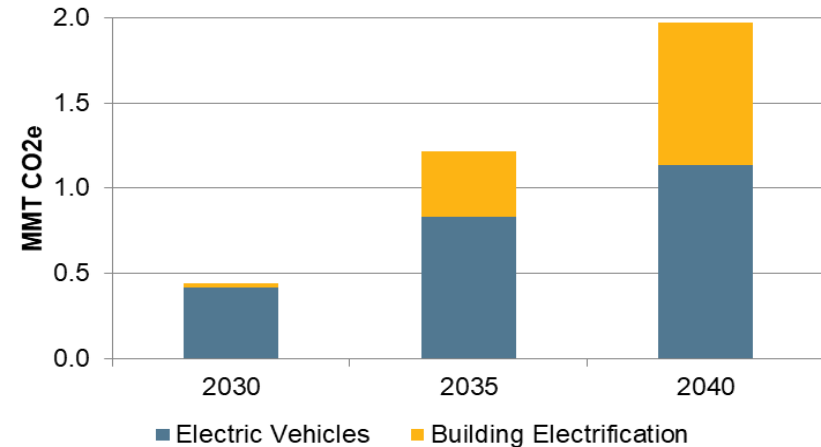
# Timeline of The California 80x50 Scenario



- Investment in electrification and EE through 2040 equals 1.5 billion (2016\$)

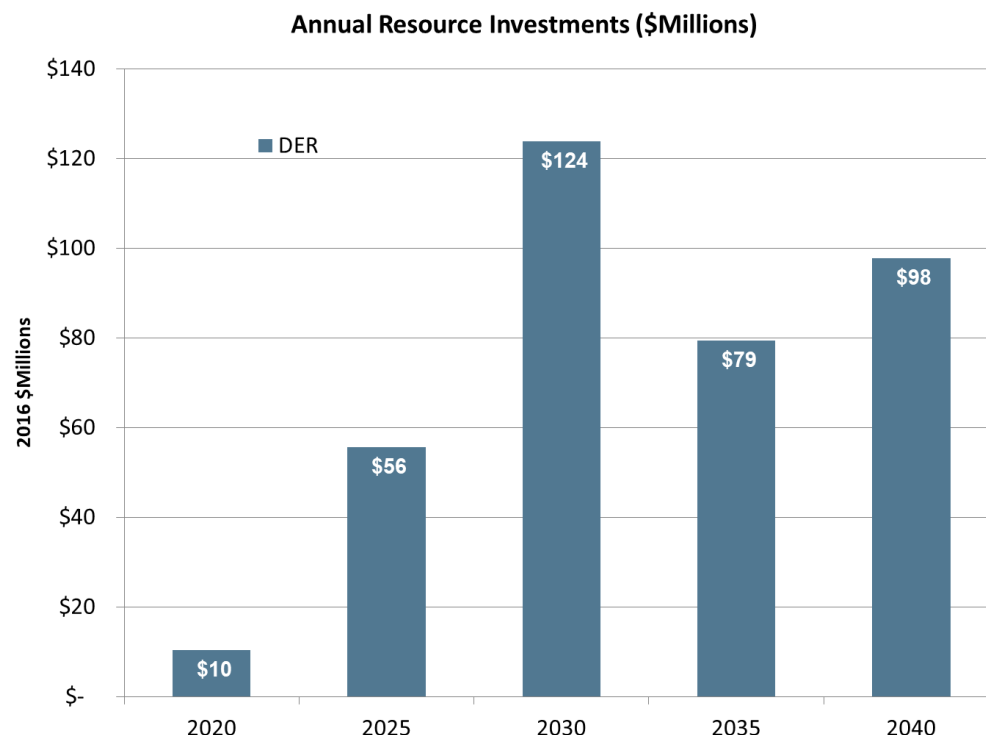
# GHG Reductions from Electrification

- Local building and transportation electrification efforts result in nearly 2 MMT of GHG reduction by 2040
- Achieving SMUD's SD-9 goal along with California's 80x50 will reduce Sacramento area GHG emissions by 64% relative to 2020 emissions



# Local Spending for Local GHG Reductions

- Significant local spending is required to electrify transportation and buildings
  - Additional local transportation funding will come from Low Carbon Fuel Standard market
- Costs will ramp up, partially offset by changes in codes and standards over time



# Net Zero Benefits

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- SMUD investments to electrify transportation and buildings will lower Sacramento area GHG emissions
- Local emissions reductions will directly benefit disadvantaged and low income communities in Sacramento
- Electrification efforts will result in increased electric load for SMUD
  - GHG associated with these loads will be mainly offset with new renewables
- Increased electric sales from electrification will help keep rates low as we transition to a low carbon economy
  - Relatively lower electric rates will increase demand for transportation and building electrification and support the transition to a low carbon economy
- State does not currently credit electrification emission reductions against electric utilities GHG footprints
  - SMUD will develop an SD9 methodology to count emission reductions from electrification
- While technology, market, regulatory, customer, financial, and reliability risks still exist they can be managed and mitigated as we move along the GHG pathway established in this IRP

# Staff Proposal

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- Modify SD-9 to include the following goals:
  - 2030 Power Supply GHG Goal: 1.65 million metric tons
  - 2040 Power Supply GHG Goal: 1.0 million metric tons offset by investments to achieve Net Zero
- Net Zero means SD-9 emissions will be offset by other carbon reduction measures
  - Measures include vehicle and building electrification and energy efficiency done to support California's 80x50 goals
    - Vehicle and building electrification increases SMUD's GHG footprint but reduces the regions overall GHG emissions
    - Electrification efforts will be done locally and support DAC's
- New renewables, large hydro, GHG offsets, will all continue to count for SD-9
- SD-9 footprint will continue to be adjusted for weather, hydro conditions, and wholesale sales



# Next Steps

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- September Board Meeting
  - Adopt new GHG goals and SD-9 language
  - Approve IRP (Presentation and Public Report)
- Develop methodologies for SD-9 accounting and seek Board approval in early 2019
  - Accounting for emission reductions from transportation and building electrification
  - Accounting for the “doubling” of energy efficiency by 2030
- File detailed IRP with the CEC in April 2019