

# Exhibit to Agenda Item #8

Board Finance & Audit Committee Meeting and Special SMUD Board of Directors Meeting

Tuesday, October 2, scheduled to begin at 5:30 p.m.

Customer Service Center, Rubicon Room

# 2018 IRP: Board feedback

## Board requests from the September 5 ERCS Committee meeting

- What is the cost just to meet State mandates?
- Provide more detail on investments and rate/bill impacts
- Evaluate GHG offsets for reducing SD-9 net emissions from 1 million MT to 350k MT
- Propose SD-9 language for IRP options

# Meeting State Mandates

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Meeting only regulatory mandates would save SMUD \$1.7 to \$2.6 billion through 2040 and result in:

- Less local investment in renewables and reliability
- Less local electrification spending
- SMUD investments substantially exceed state mandates
- Achieving a 60% RPS (SB100) costs \$25-30 million



# Board Option Overview

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## Option 1

- Target: 1,000,000 MT GHG in 2040
- Net Zero in 2040
- Aggressive local electrification investments

## Option 2

- Target in 2040
  - 750,000 MT
  - 500,000 MT
  - 350,000 MT
- Net Zero in 2040
- Additional investments through non-local renewables
- Aggressive local electrification investments

## Option 3

- Target: 350,000 MT GHG in 2040
- Net Zero in 2040
- Lower GHG target met through non-local renewables
- Reduced electrification investments and higher local emissions

## Option 4

- Target: 1,000,000 MT GHG in 2040
- Net Negative in 2040
- Additional 650,000 MT in “offsets” in 2040
- Aggressive local electrification investments

# Option 4: “Offsets”

GHG Offsets could be used to further reduce SMUD’s net GHG emissions at lower costs than adding non-local renewables

- Produce same non-local GHG reductions as in Option 2
- Offsets are substantially less expensive than non-local renewables
- Offsets allow more flexibility than RPS requirements

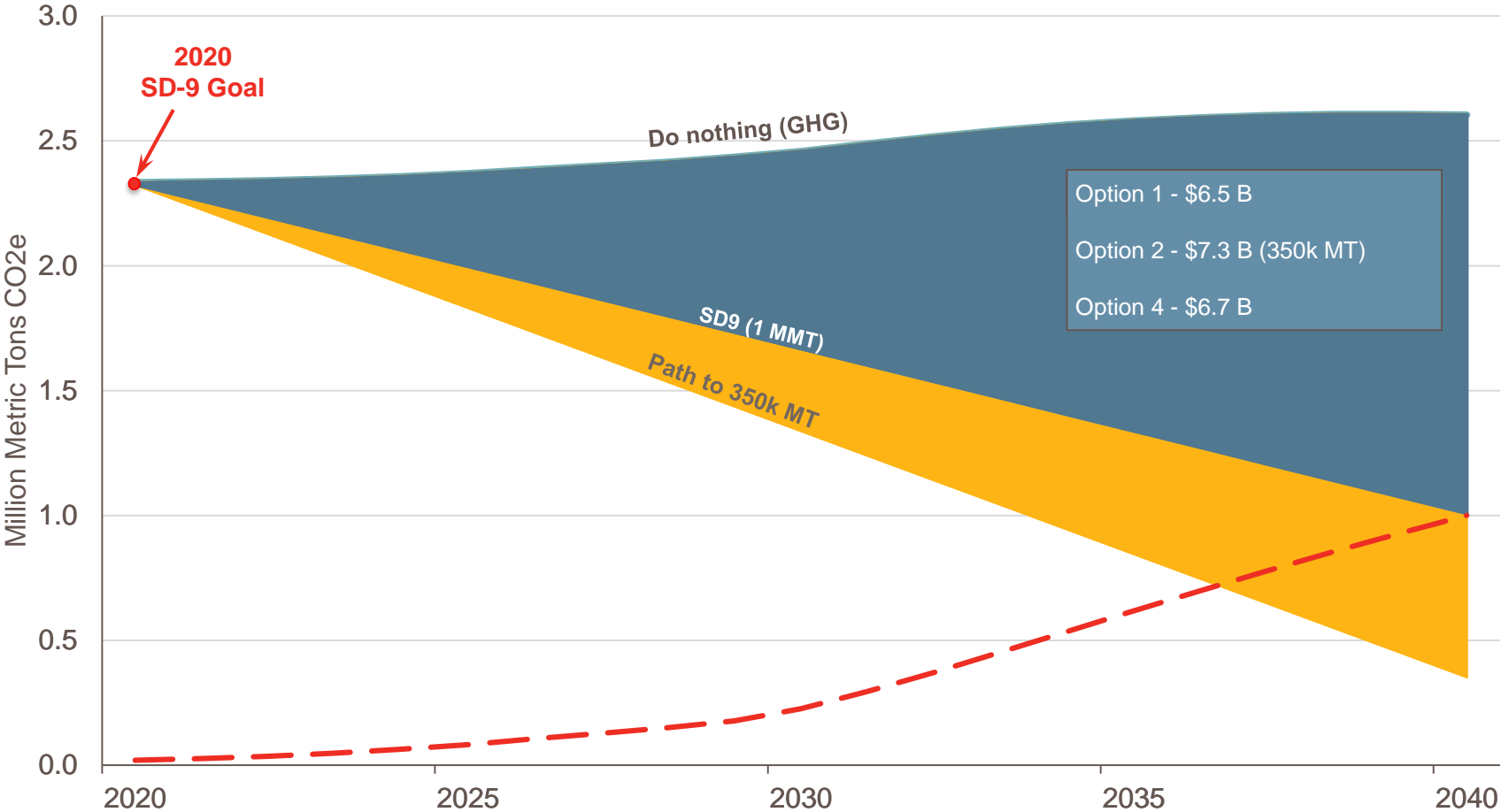
Offsets meeting CARB’s requirements include

- forest (reforestation, avoided conversion, improved forest management, urban forests)
- livestock manure management gas capture and destruction (U.S. and Mexico)
- organic waste composting and digestion
- ozone depleting substances destruction

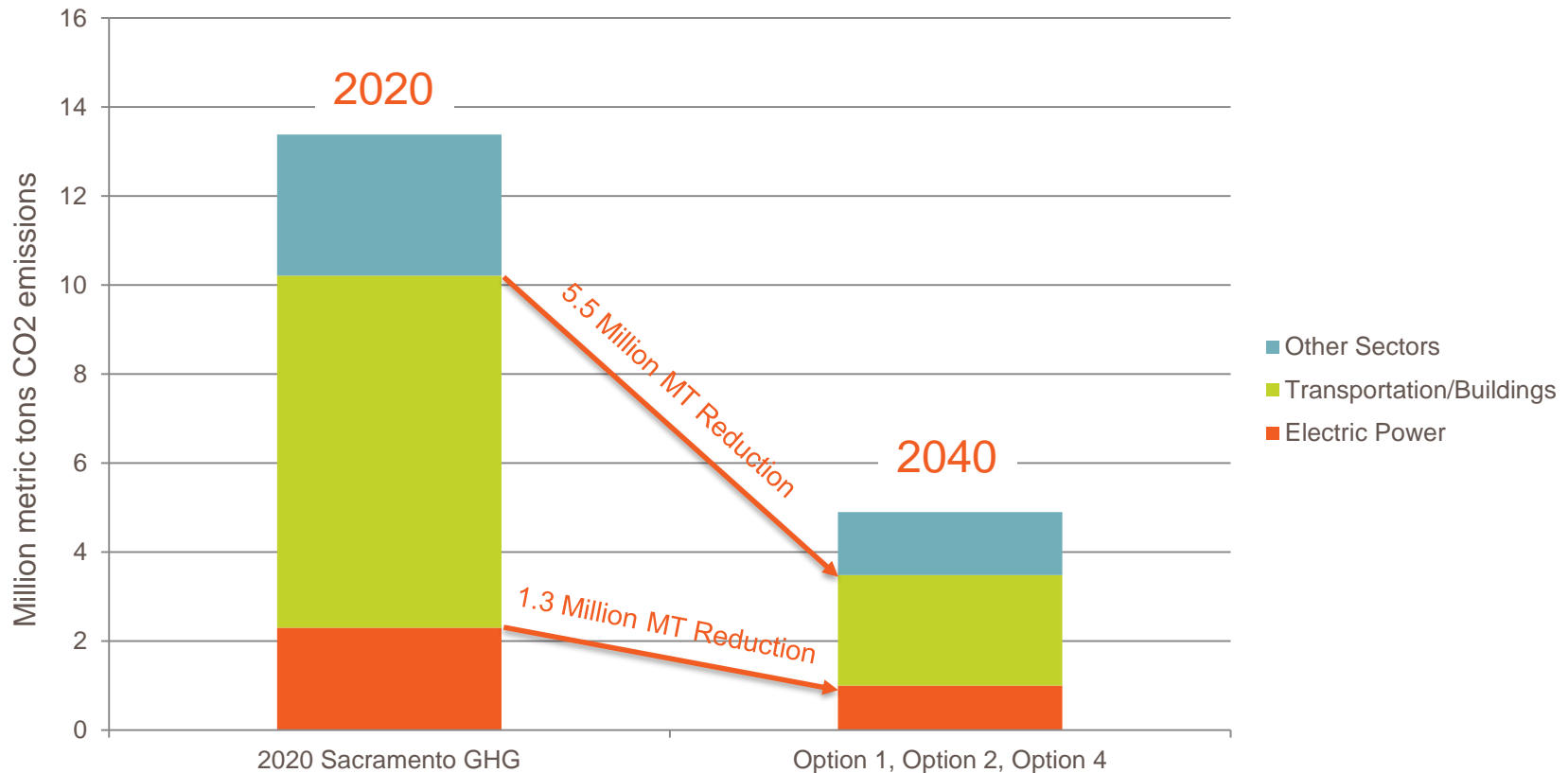
Cumulative costs of carbon reductions to achieve 750/500/350k MT using carbon offsets:

- 750k MT = \$100M
- 500k MT = \$200M
- 350k MT = \$250M

# Overview of Investment and GHG Impact



# Impact on Sacramento area GHG emissions



- Transportation and building electrification contribute more than 4x the local GHG reduction than the electric sector but SMUD spending is less on electrification
- Non-local renewables (Option 2) and carbon offsets (Option 4) do not lower local GHG emissions

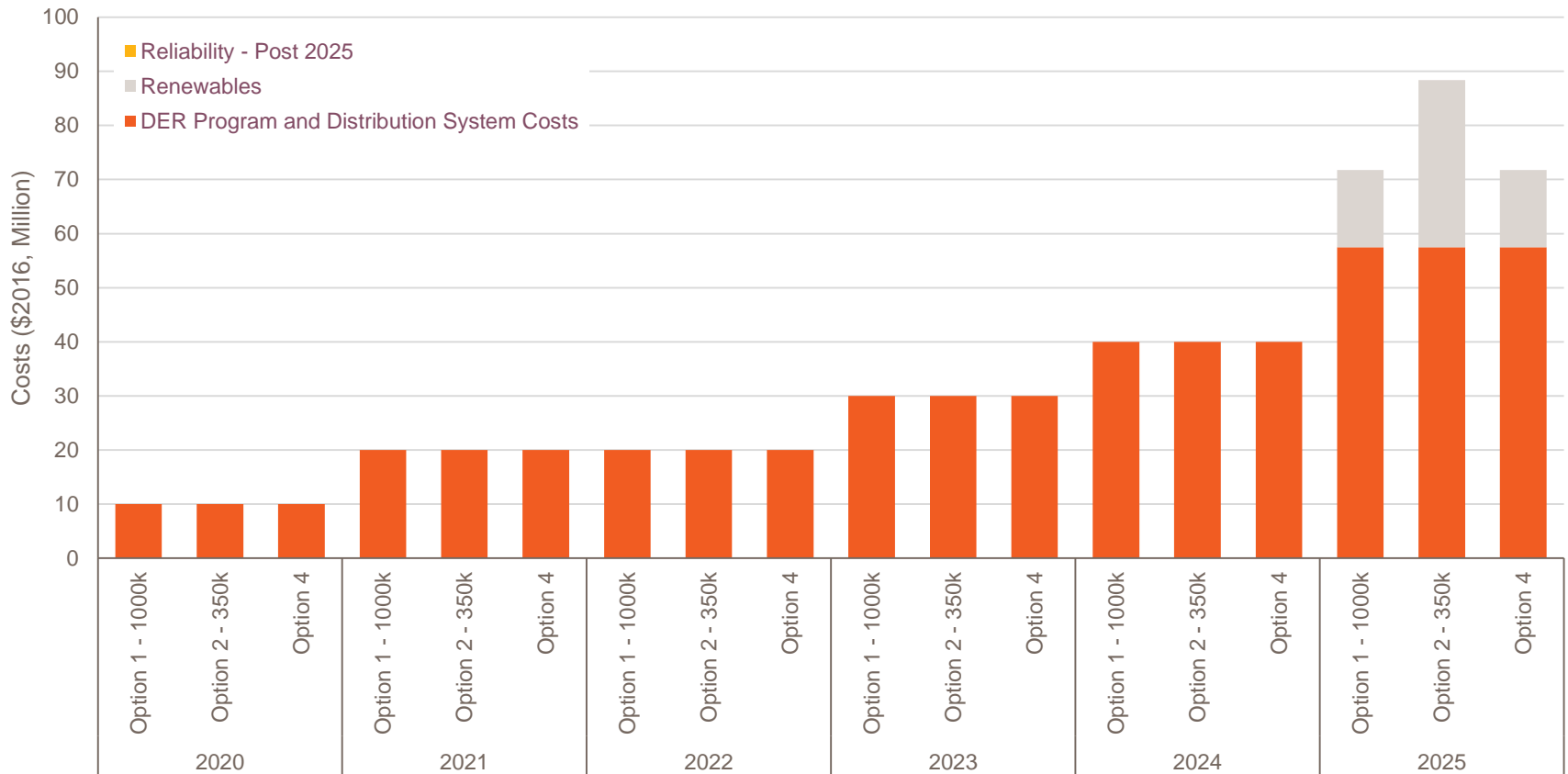
# Detailed Option Comparison

Option	(a) Cumulative Electrification & EE Spend (2016 \$B)	(b) Cumulative Renewable/ Reliability Spend (2016 \$B)	(c) Cumulative Offsets Spend @ \$40/MT (2016 \$B)	(a) + (b) + (c) Cumulative Total Spend (2016 \$B)	2040 Sac Area GHG Emissions (MMT)	2040 Avg Electric Bill Increase over 2020 (\$/Month)
1 1 MMT	\$1.7	\$4.8	\$0.0	\$6.5	4.9 (64% below 2020)	\$76 (74%)
2 750k MT	\$1.7	\$5.1	\$0.0	\$6.8	4.9	\$79 (77%)
2 500k MT	\$1.7	\$5.4	\$0.0	\$7.1	4.9	\$82 (80%)
2 350k MT	\$1.7	\$5.6	\$0.0	\$7.3	4.9	\$83 (81%)
4 350k MT Offsets	\$1.7	\$4.8	\$0.2	\$6.7	4.9	\$78 (76%)

- Emissions in Options 2 are offset by non-local renewables
- Offsets in Option 4 produce same non-local GHG reduction as Option 2 but at much lower cost
- Sacramento area emissions stay at 4.9 MMT in 2040
- Long-term commitments to non-local renewables limit options for reducing bill impacts
  - Less local electrification investments would be primary means of mitigating bill impacts

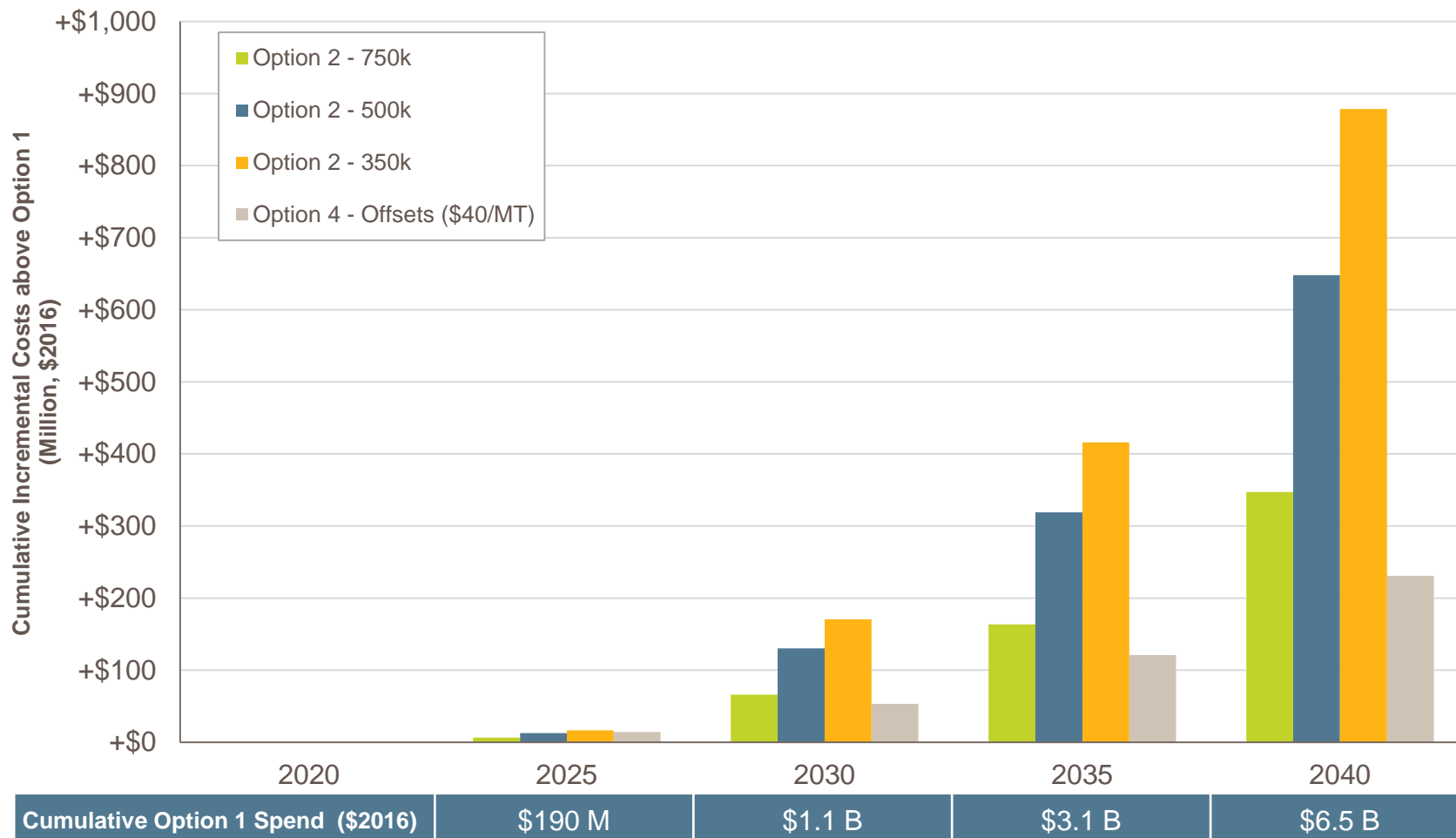


# Near Term Investment by Category

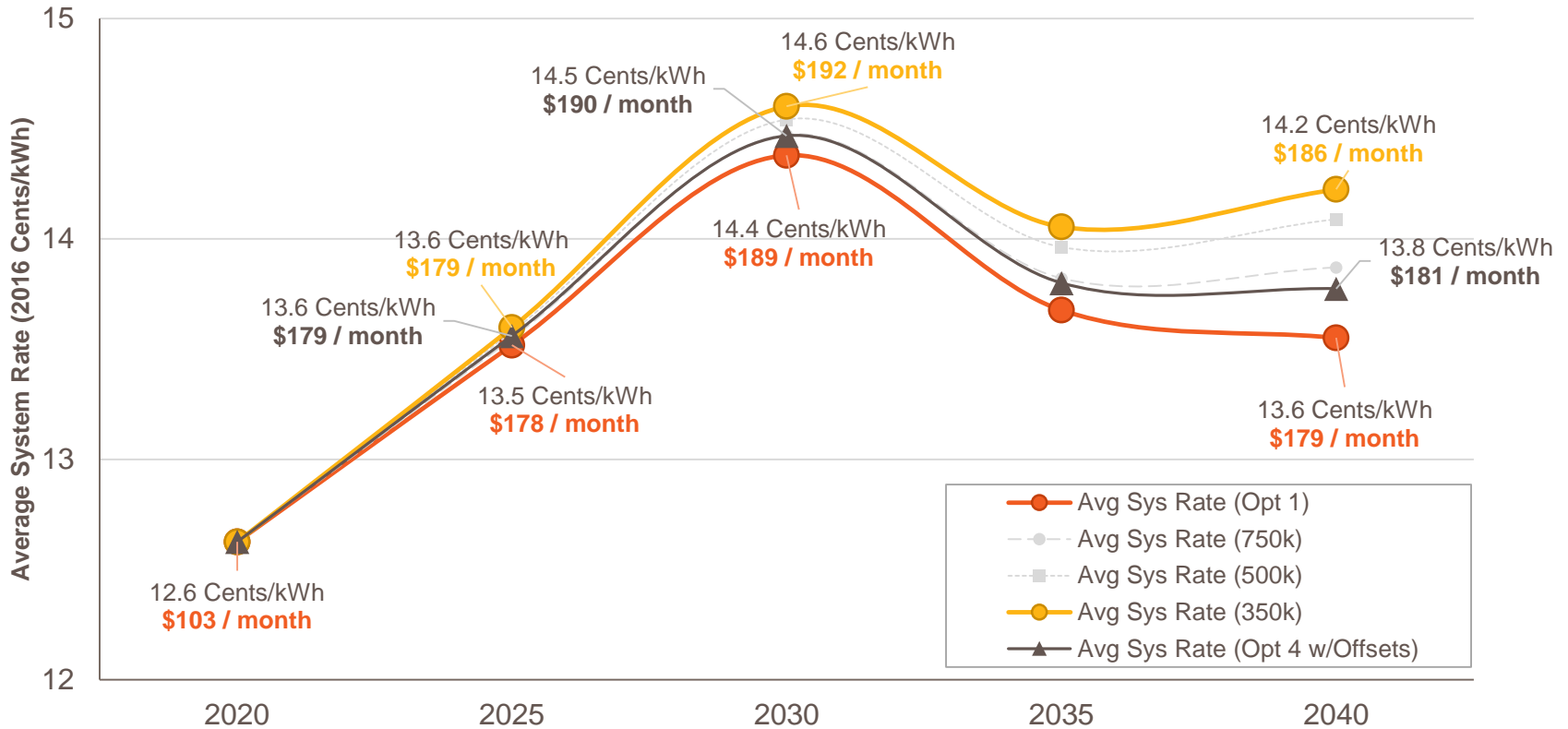


- SMUD continually optimizes RPS requirements in light of GHG targets, regulatory requirements, and renewable markets, which may result in earlier RPS investments.

# Cumulative Incremental Costs Above Option 1



# Rate and Bill Impacts



- Rate/bill impacts could be greater if renewable investments are needed earlier
- Prior to 2030, most customers will not have converted to electric transportation and building use
- Does not include rate impacts from other increased costs or investments

# SD-9 Goals: Update Options

- **Option 1** – \$6.5 B total costs
  - 1.35 Million MT by 2030
  - Net Zero in 2040
- **Option 2** – \$6.8-\$7.3 B total costs
  - 1.35 Million MT by 2030
  - Net Zero in 2040
    - Additional GHG reduction of 250/500/750k MT from investments in non-local renewables
- **Option 4** – \$6.6 - \$6.7 B
  - 1.35 Million MT by 2030
  - Net Zero in 2040
    - Additional GHG reduction of 250/500/750k MT from purchasing offsets

# Staff Recommendation – Option 1

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- Modifications to SD-9 :
  - Add a 2030 GHG Goal of 1.35 million metric tons
  - Add 2040 and 2050 GHG Goals of Net Zero
  - Adjust RPS Goals to be consistent with SB100
  - Include language to allow electrification to count towards GHG reduction
  - Include language to confirm SMUD’s commitment to continuing to look for opportunities to further reduce GHG beyond SD-9 goals

# Draft SD-9 Language – Option 1

It is a core value of SMUD to provide its customer-owners with a sustainable power supply through the use of an integrated resource planning process. A sustainable power supply is defined as one that reduces SMUD's net long-term greenhouse gas (GHG) emissions to serve retail customer load to Net Zero by 2040. Net Zero is achieved through investments in vehicle and building electrification, energy efficiency, clean distributed resources, RPS eligible renewables, large hydro, and biogas. SMUD shall assure reliability of the system, minimize environmental impacts on land, habitat, water quality, and air quality, and maintain a competitive position relative to other California electricity providers.

To guide SMUD in its resource evaluation and investment, the Board sets the following interim goal:

Year	Net Greenhouse Gas Emissions (metric tons)
2020	2,318,000
2030	1,350,000
2040	Net Zero
2050	Net Zero

- b) Provide dependable renewable resources to meet 33% of SMUD's retail sales by 2020, 44% by 2024, 52% by 2027, and 60% of its retail sales by 2030 and thereafter, excluding additional renewable energy acquired for certain customer programs.
- c) In meeting GHG reduction goals, SMUD shall emphasize local and regional environmental benefits.
- d) SMUD will continue exploring additional opportunities to accelerate and reduce carbon in our region beyond the GHG goals in this policy.
- e) Promote cost effective, clean distributed generation through SMUD programs.

# Draft SD-9 Language – Option 2

It is a core value of SMUD to provide its customer-owners with a sustainable power supply through the use of an integrated resource planning process. A sustainable power supply is defined as one that reduces SMUD's net long-term greenhouse gas (GHG) emissions to serve retail customer load to Net Zero by 2040. Net Zero is achieved through investments in vehicle and building electrification, energy efficiency, clean distributed resources, RPS eligible renewables, large hydro, and biogas. SMUD shall assure reliability of the system, minimize environmental impacts on land, habitat, water quality, and air quality, and maintain a competitive position relative to other California electricity providers.

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c) In meeting GHG reduction goals, SMUD shall emphasize local and regional environmental benefits.

d) In addition to achieving Net Zero by 2040, SMUD will purchase additional non-local renewables to reduce GHG by 250/500/650k MT by 2040.

e) Promote cost effective, clean distributed generation through SMUD programs.

# Draft SD-9 Language – Option 4

It is a core value of SMUD to provide its customer-owners with a sustainable power supply through the use of an integrated resource planning process. A sustainable power supply is defined as one that reduces SMUD's net long-term greenhouse gas (GHG) emissions to serve retail customer load to Net Zero by 2040. Net Zero is achieved through investments in vehicle and building electrification, energy efficiency, clean distributed resources, RPS eligible renewables, large hydro, and biogas. SMUD shall assure reliability of the system, minimize environmental impacts on land, habitat, water quality, and air quality, and maintain a competitive position relative to other California electricity providers.

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c) In meeting GHG reduction goals, SMUD shall emphasize local and regional environmental benefits.

d) In addition to achieving Net Zero by 2040, SMUD will purchase offsets to reduce GHG emissions by 250/500/650k MT by 2040.

e) Promote cost effective, clean distributed generation through SMUD programs.