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Description:	Rachel Huang, SMUD
Filer:	Raquel Kravitz
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Accelerating Building Electrification

Rachel Huang
CEC IEPR Commissioner Workshop on Building Decarbonization
May 25, 2021

Powering forward.
Together.





Flexible pathway to zero carbon



Natural gas generation repurposing

Retire 2 power plants by 2025 and retool remaining 3 to minimize emissions

~\$2.5 billion investment



Proven clean technology

Expand SMUD's renewable and battery storage resources by 3.5x

>3,000 MW of new renewable energy & storage – equivalent to energy needs of more than 600,000 homes

Support customer resources
Growing rooftop solar and batteries



90% reduction of greenhouse gas emissions

~\$2 billion investment



New technology & business models

Pilot & scale new projects and programs

- 2x savings from energy efficiency & building electrification
- Education & demand flexibility
- Virtual power plants & vehicle-to-grid technology
- New grid-scale technologies

Financial

- Pursue grants & partnerships
- Limit rate impacts to rate of inflation



Maximize community benefits

- Keep affordable rates & reliable power
- Improve local air quality & overall community health
- Reduce regional impacts of carbon – drought, wildfires & extreme weather
- Create regional clean tech jobs
- Strengthen all communities
- Support under-resourced communities
- Involve our customers & community in this transition

Goal:

Eliminate CO₂ from SMUD's power supply



Zero carbon by 2030

Thousands of new regional clean tech jobs



Electrification at SMUD

CHEAPER | SAFER | HEALTHIER | BETTER



Support 100% Electrification of Buildings by 2045

2018 - Current

Launched Program Offerings in All Sectors

Established Carbon-based goals to guide efficiency/electrification portfolio

2,500+ Equivalent electric home conversions

2021 - 2030

Codes for new construction

Full-service / turnkey offerings

Financing options + infrastructure for customers

34% All-electric buildings

2030 - 2040

All new appliance and vehicle sales electric by ~2030

100% of low-income customers converted to electric by 2040

78% All-electric buildings

>\$1 Billion SMUD Commitment

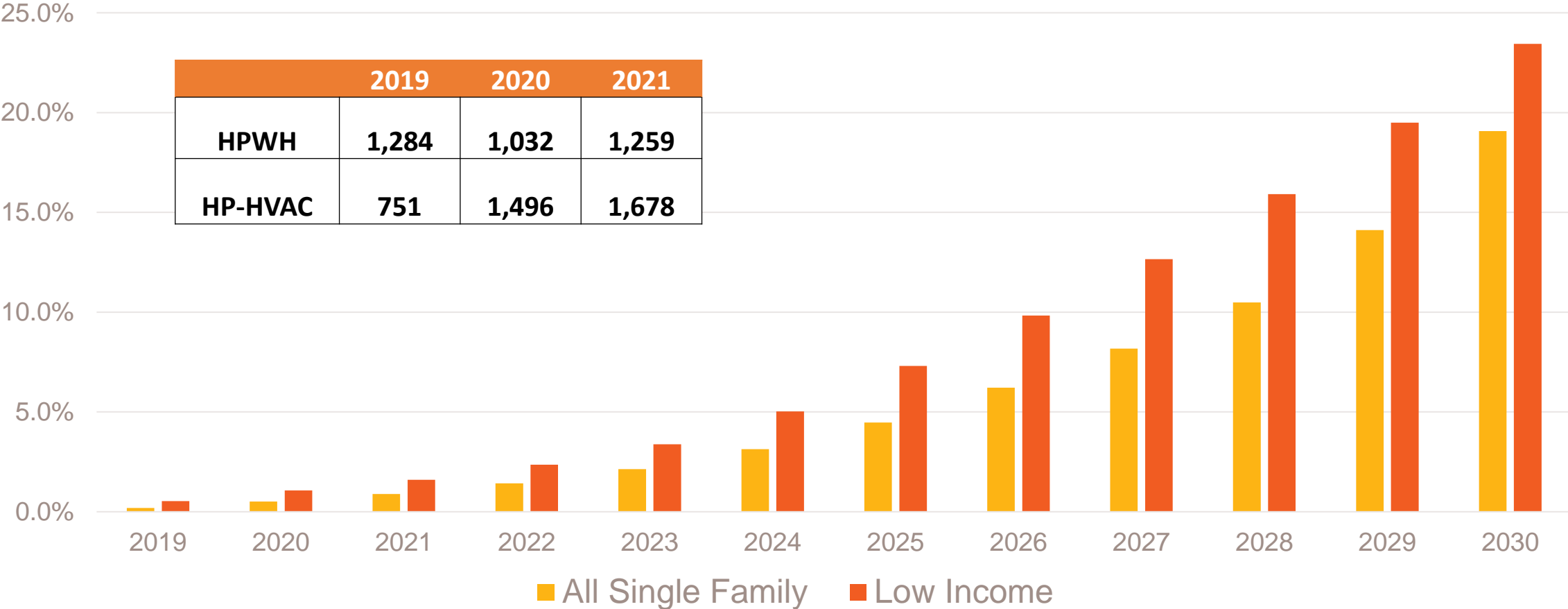
SMUD's Carbon Metric

- Adopted in January 2020
- Objectives:
 - Creates one metric for electric efficiency, gas efficiency and electrification
 - Increases value of electric efficiency when there is more carbon in the grid
 - Brings together our portfolio planning, resource planning & 2030 Plan
 - Allows us to minimize carbon emissions while thinking holistically about our programs

	1	2	3	4	5	6	7	8	9	10	11	12
1	0.39	0.38	0.36	0.29	0.20	0.30	0.34	0.36	0.38	0.36	0.40	0.40
2	0.38	0.38	0.35	0.29	0.20	0.30	0.33	0.36	0.38	0.35	0.40	0.39
3	0.38	0.38	0.36	0.29	0.20	0.30	0.33	0.35	0.37	0.35	0.40	0.40
4	0.39	0.38	0.35	0.29	0.22	0.30	0.34	0.36	0.37	0.35	0.40	0.39
5	0.39	0.38	0.33	0.29	0.26	0.30	0.34	0.35	0.39	0.38	0.40	0.39
6	0.39	0.38	0.34	0.31	0.26	0.30	0.35	0.36	0.41	0.42	0.40	0.39
7	0.40	0.40	0.36	0.28	0.19	0.28	0.33	0.34	0.40	0.42	0.41	0.39
8	0.41	0.39	0.33	0.21	0.14	0.25	0.29	0.30	0.33	0.31	0.40	0.41
9	0.41	0.38	0.28	0.18	0.11	0.24	0.27	0.27	0.30	0.26	0.37	0.39
10	0.39	0.35	0.20	0.07	0.10	0.18	0.24	0.22	0.23	0.19	0.33	0.37
11	0.35	0.30	0.10	0.03	0.09	0.16	0.25	0.21	0.21	0.14	0.30	0.36
12	0.31	0.25	0.09	0.05	0.09	0.17	0.26	0.26	0.24	0.18	0.25	0.33
13	0.31	0.21	0.16	0.06	0.15	0.20	0.29	0.29	0.29	0.24	0.25	0.34
14	0.32	0.24	0.19	0.20	0.20	0.25	0.33	0.34	0.36	0.34	0.29	0.34
15	0.33	0.28	0.28	0.26	0.26	0.29	0.33	0.38	0.41	0.39	0.35	0.36
16	0.38	0.35	0.34	0.30	0.28	0.27	0.34	0.40	0.42	0.41	0.38	0.38
17	0.39	0.38	0.35	0.32	0.31	0.29	0.40	0.46	0.46	0.45	0.39	0.38
18	0.39	0.39	0.36	0.34	0.32	0.29	0.42	0.48	0.46	0.45	0.40	0.39
19	0.40	0.40	0.37	0.33	0.32	0.29	0.41	0.45	0.44	0.45	0.40	0.41
20	0.41	0.40	0.37	0.33	0.31	0.29	0.40	0.43	0.44	0.44	0.40	0.40
21	0.40	0.40	0.36	0.32	0.31	0.31	0.39	0.40	0.43	0.42	0.40	0.40
22	0.40	0.39	0.35	0.29	0.31	0.32	0.36	0.38	0.41	0.40	0.40	0.40
23	0.40	0.39	0.35	0.29	0.26	0.30	0.35	0.36	0.40	0.38	0.40	0.40
24	0.39	0.38	0.35	0.29	0.22	0.30	0.35	0.36	0.39	0.37	0.41	0.40

Gas Single Family Home Conversions

Percentage Gas Homes Converted



Low Income Electrification, Direct Install

Goal:

- Electrify 100% low-income ahead of residential mass market

Program Progress:

- Low-income electrification program started in 2019
- ~1,000 gas appliances have been eliminated to date
- At each customer touch point the goal is to **electrify every end use** regardless of age or condition of the existing gas equipment

Outlook and Challenges

- Move the existing building market
- Create awareness through engaging consumers and contractors
- Develop options for moderate income customers (nonqualified low income) – financing opportunity?
- Balance grid decarbonization with electricity rates
- Consider electrification of existing buildings in the code
 - Improve code enforcement

Questions?

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