SAN MATEO COUNTY ENERGY WATCH

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

RICAPS

Regionally Integrated Climate Action Planning Suite

Multi-city Working Group

February 22, 2022

RICAPS technical assistance is available through the San Mateo County Energy Watch program, which is funded by California utility customers, administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission and with matching funds provided by C/CAG and additional funding provided by Peninsula Clean Energy.

Agenda

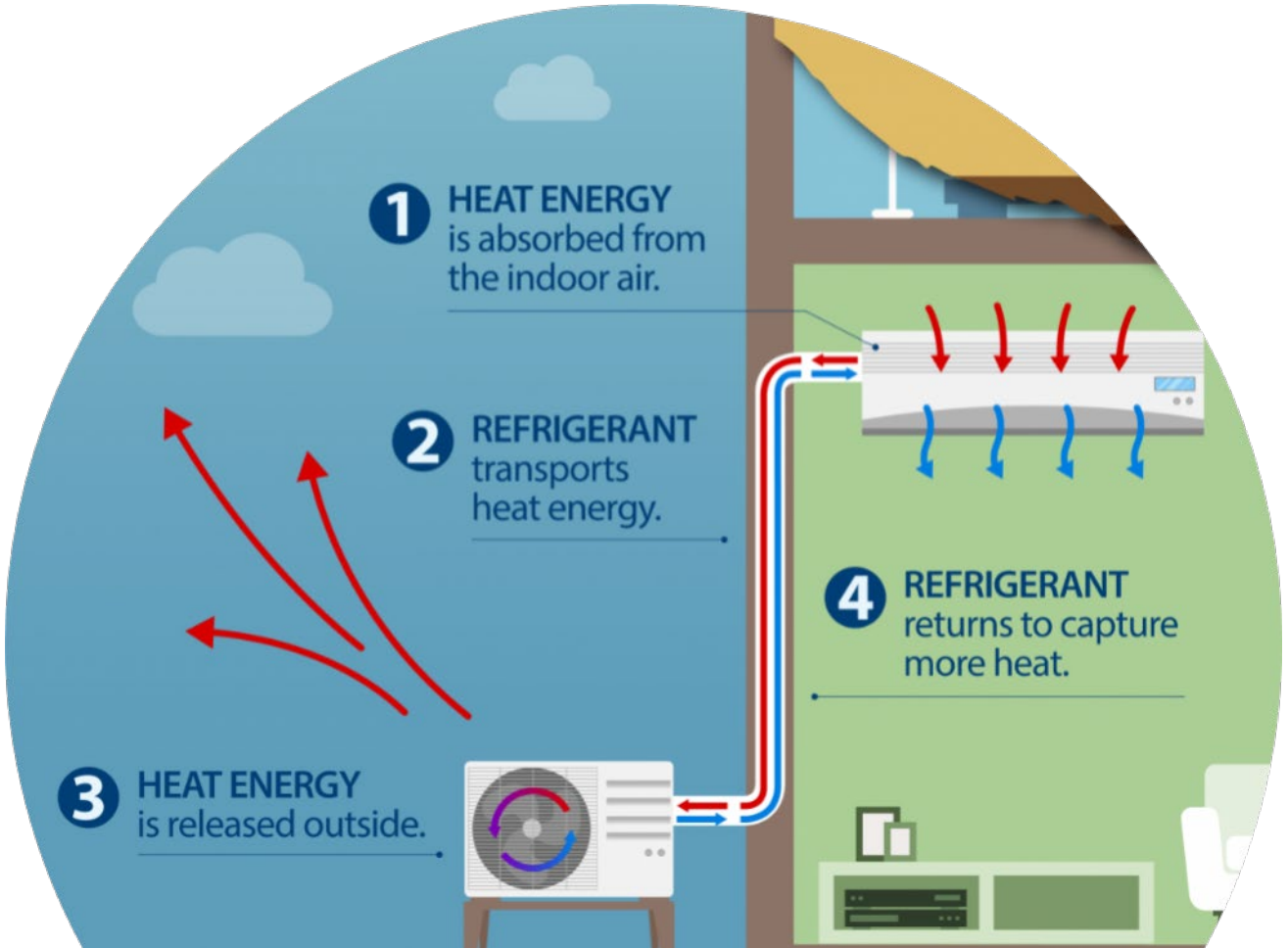
- CalRecycle Grant Update
- Building Electrification in a Carbon Neutral Future
- Discussion and Feedback Exercise
- Municipal Building Electrification Opportunities

Please introduce yourself and share something you're working on in chat!

BUILDING ELECTRIFICATION IN A CARBON NEUTRAL FUTURE

RICAPS WEBINAR FEB. 22

WHAT IS BUILDING ELECTRIFICATION?



Switching from using natural gas to electricity for heating/cooling, cooking, and clothes drying in our homes, offices, and beyond

HOW DO WE ELECTRIFY?

Replace gas appliances :

Furnace -> Electric air source heat pump provides heating *& cooling*

Gas water heaters -> electric heat pump water heater (HPWH)

Gas stove -> Electric induction cooktop

Sometimes these upgrades require other improvements to the building, like upgrading an electrical panel, updating electrical wiring, minor construction.

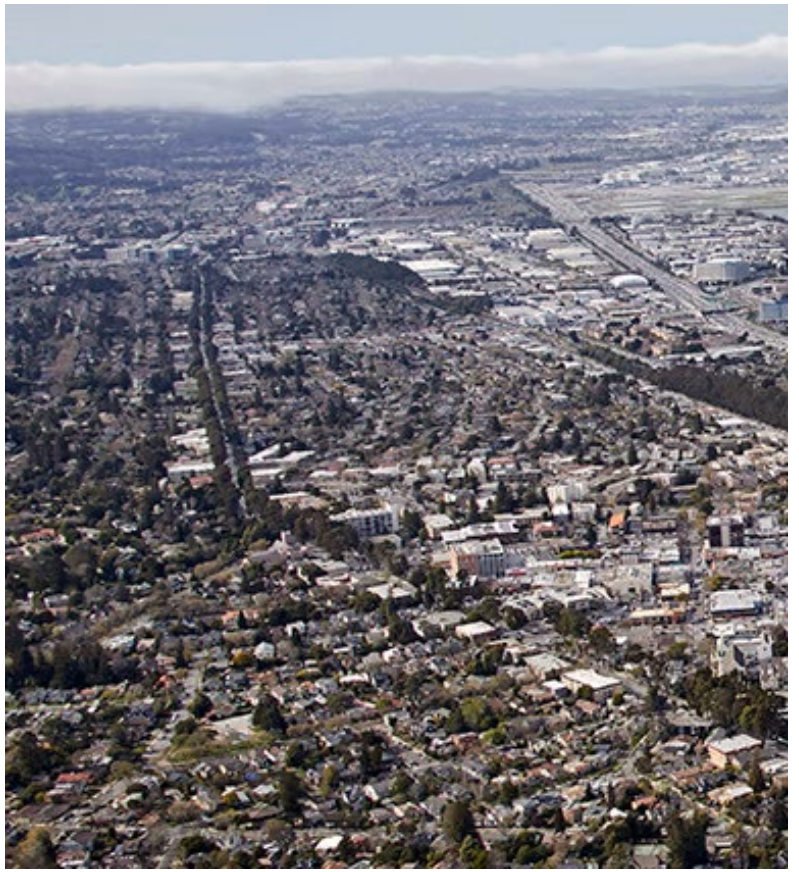
WHY ELECTRIFICATION?

- GHG Reductions
- Cost Savings
- Health & Equity
- Alignment with State

GHG REDUCTIONS | NATURAL GAS VS. ELECTRICITY

Natural gas makes up close to 15% of emissions in San Mateo County (2017)

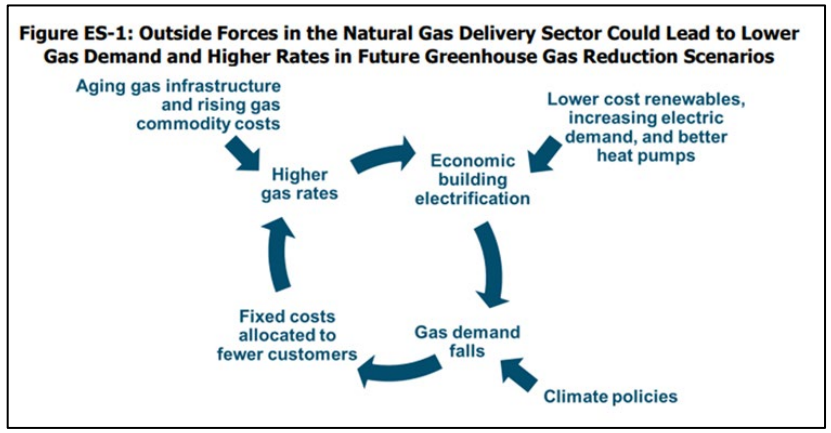
- Prior to PCE clean electricity and leakage (likely closer to 30% by 2020).
- Senate Bill 100 requires all electricity in the State of California be 50% renewable by 2030 and 100% by 2045
- PCE currently provides 100% carbon-free electricity and plans to provide 100% renewable electricity by 2025, automatically making all-electric building operations in SMC carbon-free

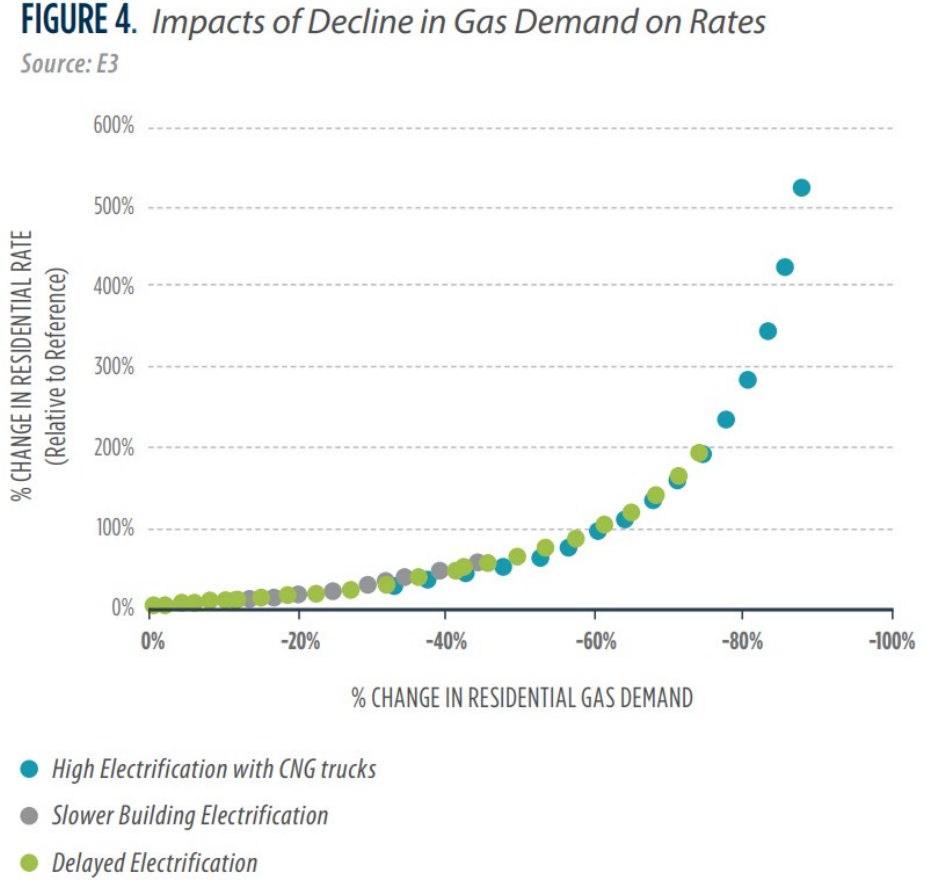


COST SAVINGS | RISING NATURAL GAS COSTS

- Most of the cost of natural gas is infrastructure costs:
  - So lower gas use means higher cost

While natural gas costs rise and take up a bigger % of emissions, electric costs stay similar but will be zero emission by 2045.





HEALTH & EQUITY | BENEFITS OF BUILDING ELECTRIFICATION

Improved Public Health

Improved indoor air quality, reduced NOX

Equity

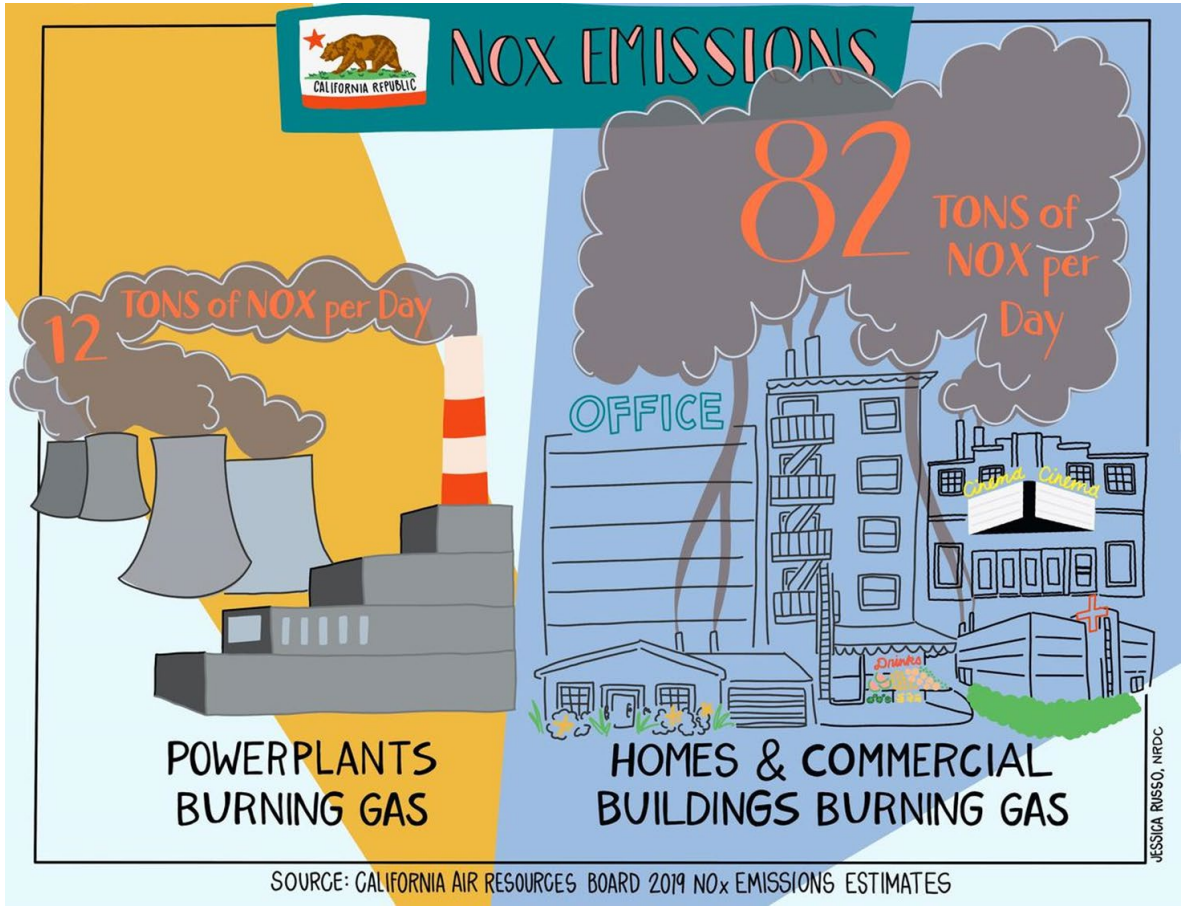
BIPOC affected first by climate change, protect residents from rising cost burden of natural gas infrastructure

Resiliency

Electric buildings + battery storage allows for resiliency against power outages

Safety

Natural gas pipelines can cause fires & explosions, vulnerable to earthquakes + fires

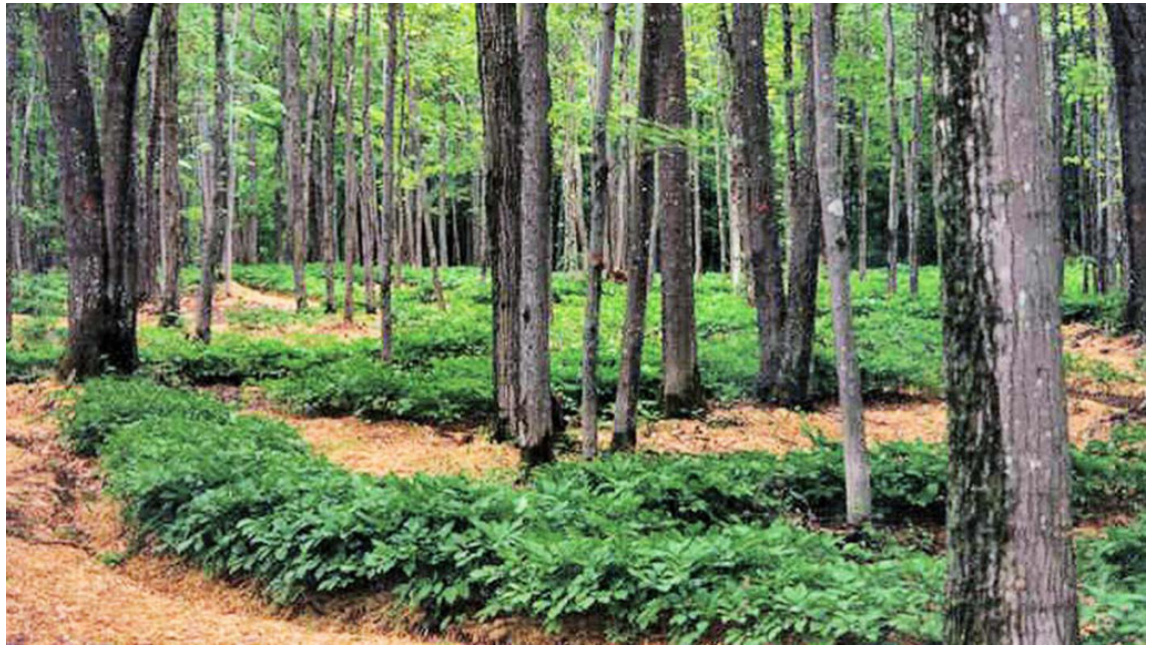


ALIGNMENT WITH STATE | 2030 TARGET

- SB 32 requires the state to reduce GHG emissions 40% by 2030
- Many SMC jurisdictions have adopted more aggressive targets in their CAPs

TO MEET STATE GOALS, WE NEED **~25%-30%** REDUCTION IN NATURAL GAS USE BY 2030

ALIGNMENT WITH STATE | CARBON NEUTRALITY



- The state also aims to achieve carbon neutrality by 2045
- Many SMC jurisdictions aim for carbon neutrality by 2035 or 2040

STATE LEVEL SCENARIO PLANNING SUGGESTS FASTEST WAY TO CARBON NEUTRAL BUILDINGS IS ELECTRIFICATION*

*https://gridworks.org/initiatives/cagas-system-transition/

HOW DO WE GET TO 30% REDUCTION IN NATURAL GAS BY 2030?

<u>New building electrification ordinance for all cities</u>

+ Benefits of aligned electrification requirements

Target 20-30% of existing buildings

+ Focus on residential buildings

+ Cost and equity considerations

NEW BUILDING ELECTRIFICATION NUTS AND BOLTS

- Cost-effectiveness
- Equity
- Exemptions and Infeasibility Waivers
- Opportunities for Countywide Collaboration

NEW BUILDING ELECTRIFICATION

COST-EFFECTIVENESS

- New building electrification has been demonstrated to be cost-effective*
  - Construction costs are lower for developers
    - Savings from no gas infrastructure and faster project timeline outweigh added costs from more expensive appliances)
  - Utility costs can increase in all electric buildings especially without heat pumps
  - Pairing with additional solar results in up-front and long-term cost savings

*https://explorer.localenergycodes.com/jurisdiction/cupertino-city/summary

NEW BUILDING ELECTRIFICATION EQUITY

- Exemptions for affordable housing, ADUs, or multifamily potentially trap low-income/BIPOC residents into:
  - Paying for higher gas prices in the future
  - Suffering health impacts from continued poor indoor air quality

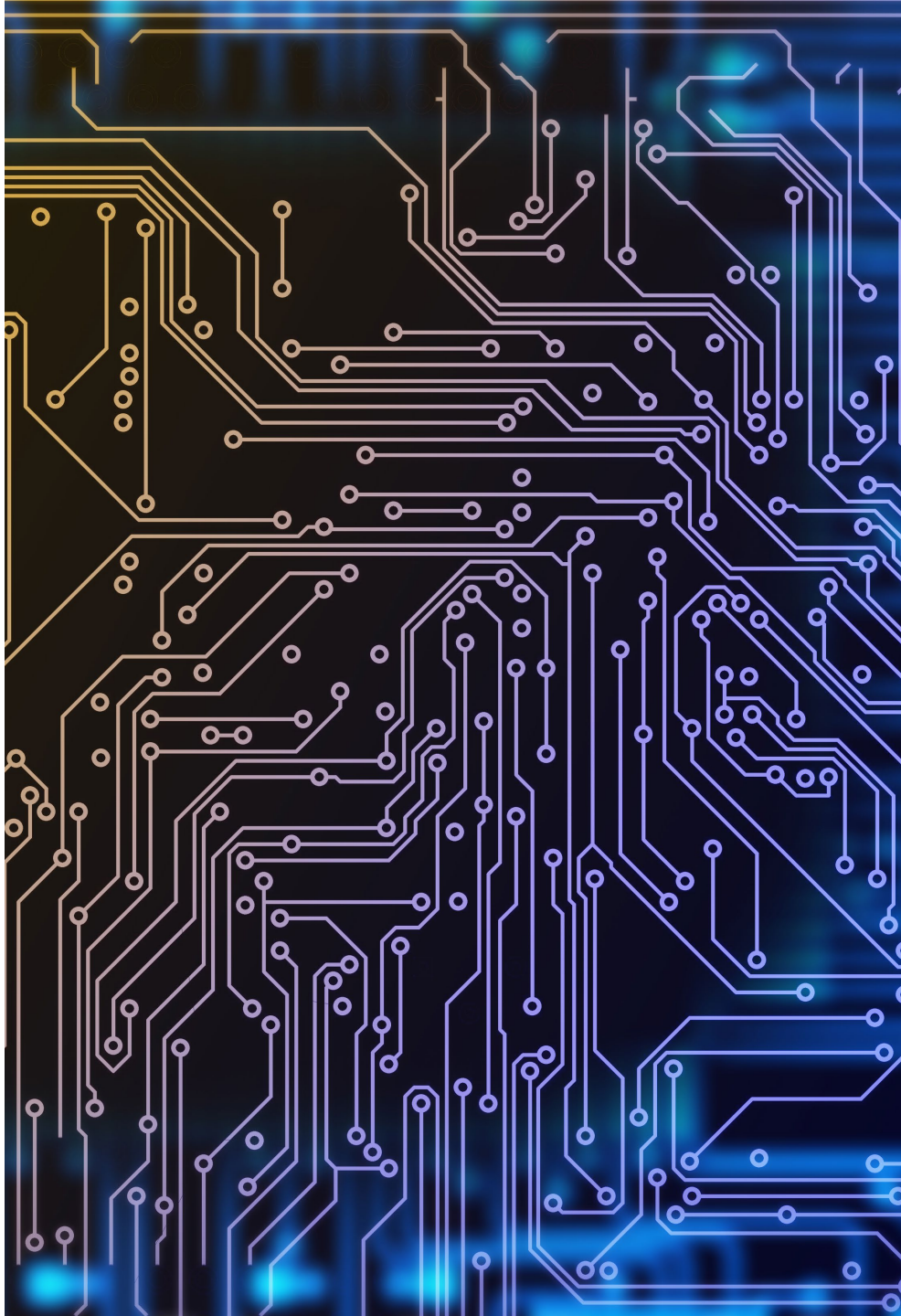
NEW BUILDING ELECTRIFICATION

EXEMPTIONS AND INFEASIBILITY WAIVERS

- Exemptions – Strive for no exemptions.
  - May relieve short term pressure but,
  - Will ultimately increase costs (more infrastructure deployed)
  - Leaving out affordable housing may seem equitable, but locks residents into long term cost increases, worse air quality
- Infeasibility Waiver – Preferred Approach
  - Onus on developer to show why gas is needed
  - Only covers specific process load
  - Important for hospitals, industrial processes, etc…

SMC CONTEXT

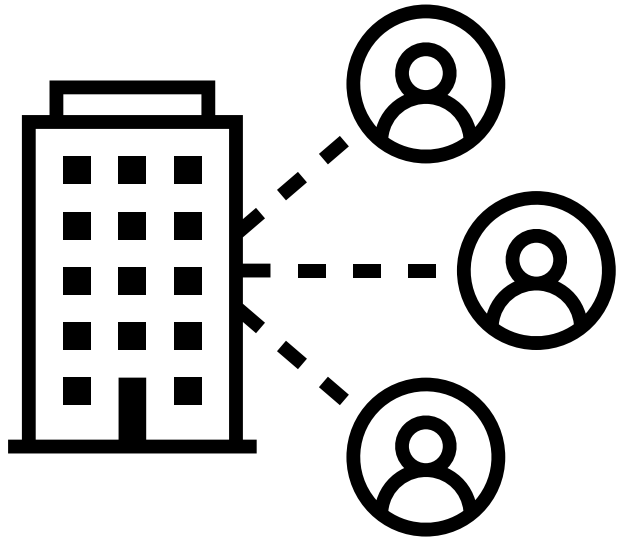
- 12 SMC jurisdictions have adopted some form of electrification reach code for new construction
  - Most cities have some level of exemptions
- In 2022 PCE is pushing for more countywide electrification reach code consistency and limiting exemptions
- Potential 2025-2030 look-ahead goals
  - Standard countywide electrification requirements for developers
  - No exemptions
  - Educated workforce



NEW BUILDING ELECTRIFICATION

OPPORTUNITIES FOR COUNTYWIDE COLLABORATION

- Consistent exemptions across jurisdiction boundaries
  - Easier on developers and contractors
- Limited exemptions countywide
  - Reduce the need to electrify later at higher cost
- Collaboration on workforce training
  - Take advantage of high-road job opportunities
- Continue to share findings of pilots and cost studies



EXISTING BUILDING ELECTRIFICATION NUTS AND BOLTS

- Cost & Equity
- Potential Solutions
- Opportunities for Countywide Collaboration

EXISTING BUILDING ELECTRIFICATION

COST AND EQUITY

Cost

- Retrofitting to be all-electric can come with a high up-front cost
  - Panel or wiring upgrades are a major variable
  - Electric appliances are usually more expensive than gas appliances
- Retrofit ready technologies are emerging as a solution
- Up-front costs pay off over time due to lower energy bills
- Adding solar can dramatically improve long-term cost effectiveness – uncertainty around NEM 3.0

Equity

- History of racist and discriminatory government policies (Jim Crow laws, redlining) have placed communities of color at a disadvantage
- Communities of color have:
  - Higher rates of energy insecurity
  - Increased likelihood of living in substandard housing
  - Statistically higher costs to retrofit (Berkeley finding)
- All-electric retrofits have potential to exacerbate displacement and overburden low-income communities without support

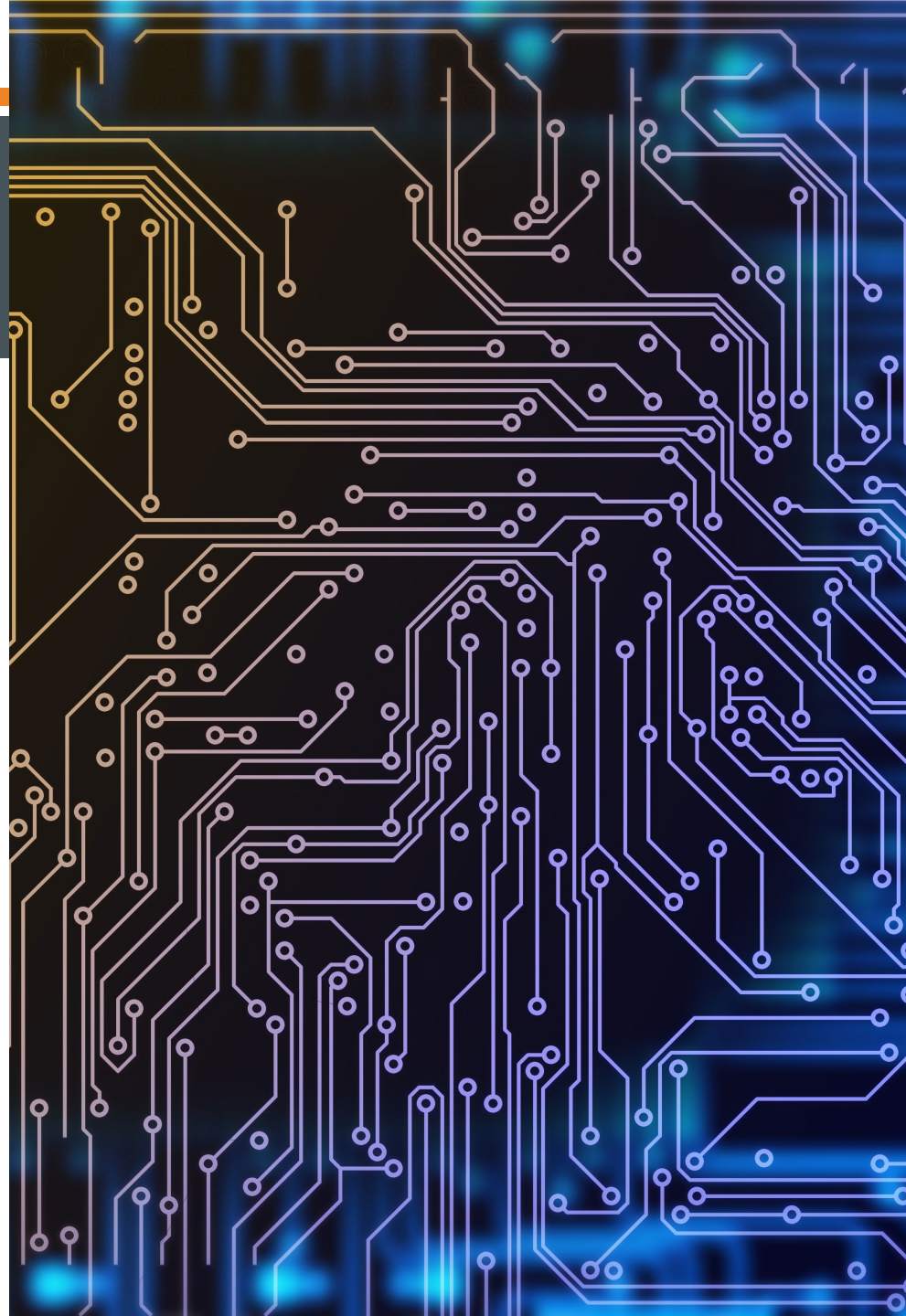
Equitable building electrification: holistic improvements to city building stock, especially in historically under-resourced neighborhoods, just transition, boosting property values, improving indoor air quality and home safety, lower energy costs

EXISTING BUILDING ELECTRIFICATION POTENTIAL SOLUTIONS

- **Step 1 (short-term):** Building electrification strategy
  - Existing building analysis
  - Cost analysis including ongoing costs for end user
  - Impacts to renters, renter/landlord dynamics
  - Tailor approach for different groups (residents, renters, restaurants, etc.)
  - Education
- **Step 2 (short-term):** Funding to cover up-front retrofit costs
  - Incentives/Direct Install
  - Tariffed on-bill financing
- **Step 3 (mid-term):** Electrification requirements for existing residential buildings or end-of-flow date
  - Including defined equity metrics for ordinance enforcement
- **Step 4 (long-term):** Advocacy for large-scale electrification

SMC CONTEXT

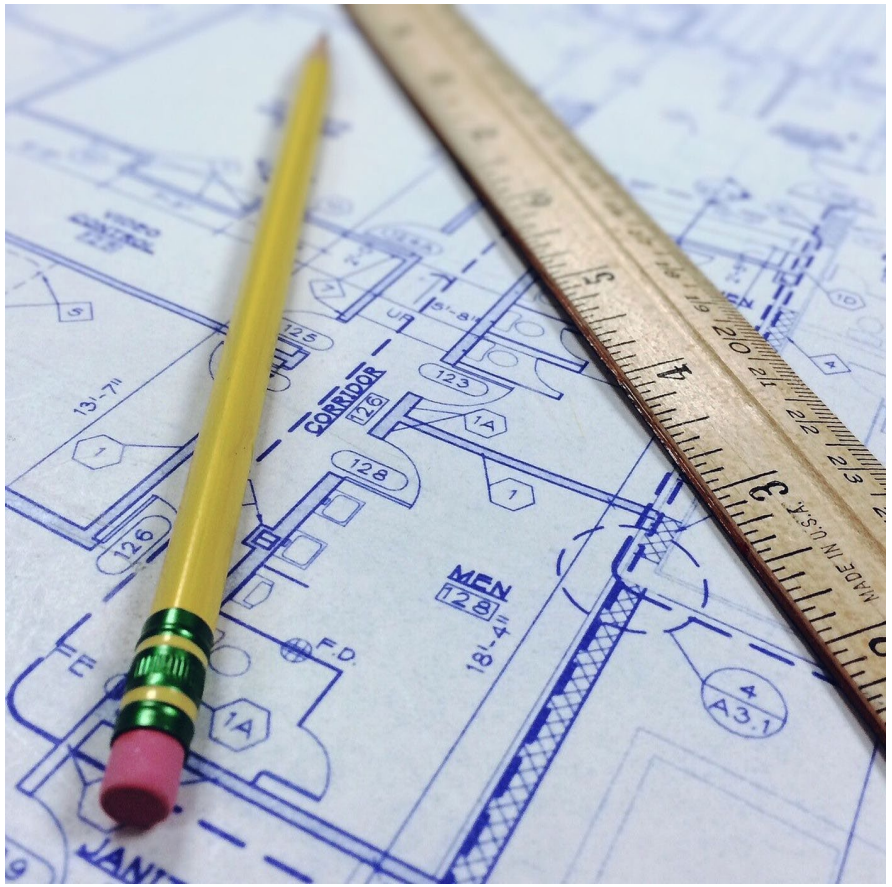
- Many SMC jurisdictions have expressed high interest in adopting an existing building electrification reach code
- PCE leading effort to develop existing building electrification reach code templates and tools (May 2022)
- Potential 2025-2030 look-ahead goals
  - All cities adopt standard reach code to require electric appliance replacement
  - Strong and widely disseminated funding pathways for multiple building types



EXISTING BUILDING ELECTRIFICATION

OPPORTUNITIES FOR COUNTYWIDE COLLABORATION

- Countywide adoption of gas shut-off date
- Countywide funding partnerships; funding turnkey retrofit program
- Comprehensive building code and compliance training
- Regional permit streamlining efforts for all-electric building retrofits, EV charging, battery storage
- Collective advocacy for federal regulatory changes for neighborhood level electrification + natural gas pruning



MURAL EXERCISE Q&A

Link to Mural

Funding Options

Free

Grants & Utility Incentives

- Grant (local, state, federal)
- Utility Rebates & Incentives

Low Cost

Muni Debt & Subsidized Debt

- Utility On-Bill Financing
- CEC Loans (ECCA 1%)
- Muni Bonds, Green Bonds & Leases (Tax-Exempt & Taxable)

Moderate Cost

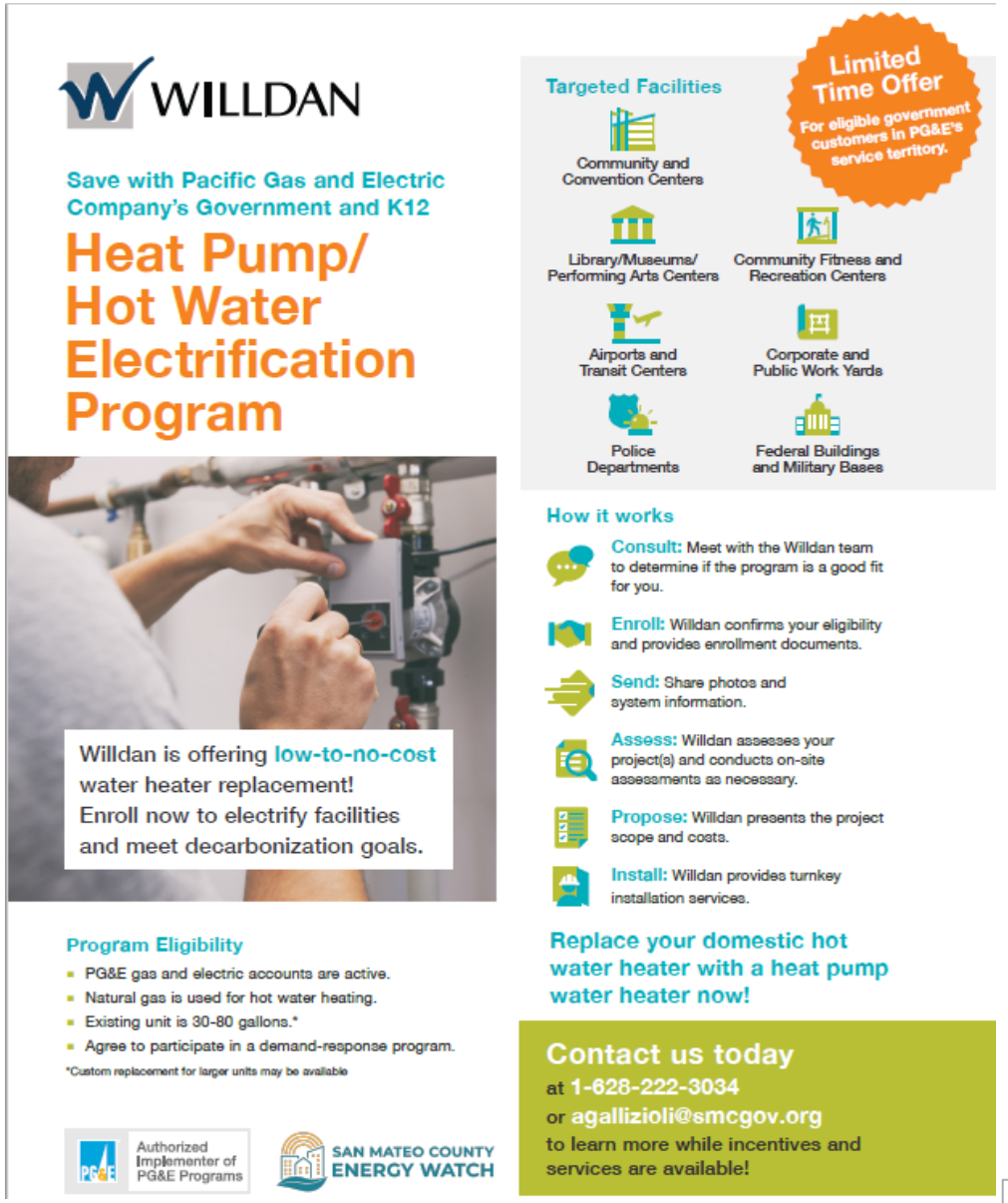
Private Debt or Equity

- Debt from energy/ infrastructure investors
- Third-party ownership of energy assets

Example Funding Option

PG&E GK12 Energy Efficiency Program

- Program goal is to assist public agencies with saving energy, implementing Climate Action Plans and reducing GHG emissions
- **Sub-program: Low-cost/no-cost turnkey installation of electric heat pump hot water heaters (HPHWH)**
  - Program Eligibility:
    - Active electric & gas accounts with PG&E
    - Natural gas is used for hot water heating
    - Existing unit is 30-80 gallons
    - Agree to participate in Demand Response program
  - ***Incentives and services available for limited time***



ANNOUNCEMENTS

RICAPS

Regionally Integrated Climate Action Planning Suite

Next Meeting (Webinar)

March 22, 1:30-3 pm

Building Electrification Part 2: Municipal Facilities

Talk with your facilities group!

The Bay Area Regional Energy Network (BayREN) Codes & Standards team invites you to register for our upcoming regional forum:

BAYREN
Local Governments Empowering Our Communities

Heat Pumps for Water and Space Heating: From the Technical to Real World Experience

Date: Thursday, March 17, 2022 | 9AM–12PM

For more information and to register visit: **www.bayrencodes.org/events**

We need your help!

Are your school districts thinking about energy efficiency, electrification, or resiliency?

SMCEW has partnered with SMCOE to support school districts with climate action and sustainability goals!

Please contact Alexandria Gallizioli (agallizioli@smcgov.org) to help your school district start planning for a resilient future.

Join us at OOS!

Job opening:

Senior Sustainability Specialist leading RICAPS program

Applications due March 8

Thank you! See you next month!

John Allan, jallan@smcgov.org (inventories, stormwater)

Alexandria Gallizioli, agallizioli@smcgov.org (municipal, special district, and school facilities; small businesses)

Alero Moju, amoju@smcgov.org (residential programs, reach codes, codes trainings)

Sultan Henson, shenson@smcgov.org (stormwater)

Susan Wright, swright@smcgov.org (RICAPS coordination, electrification strategy)

Zoe Van Duivenbode, zvanduivenbode@smcgov.org (fleet electrification)

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