



SAN LUIS OBISPO

CARBON

NEUTRAL

BUILDINGS

“workshop #2”



July 24, 2019

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OVERVIEW

[1] Provide an overview of the proposed approach

[2] Assist non-design professionals with a “how to” for review

[2] Receive comments

[3] Provide direction for additional comments



WHAT

[1] Build all electric to code, or include fossil fuels and build to stricter requirements.

[2] If fossil fuels:

/ include “retrofit ready” measures

/ pay carbon offset in-lieu fee



WHY

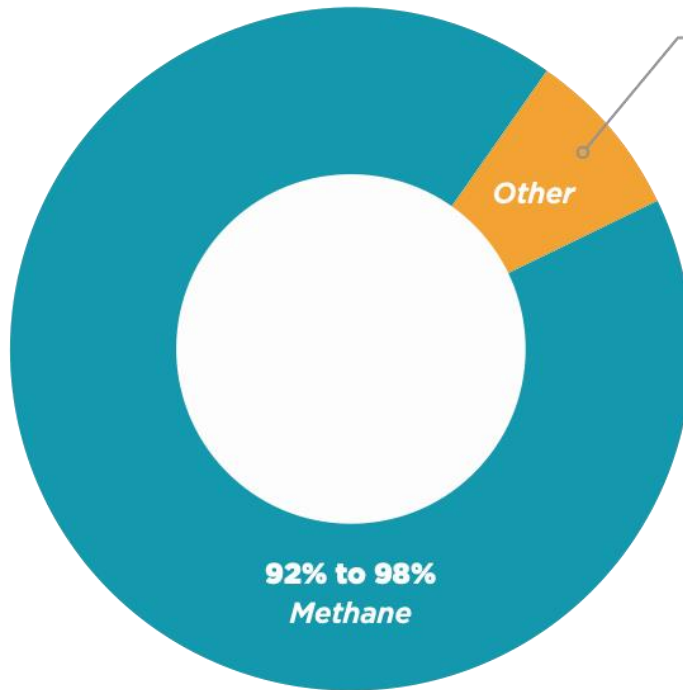
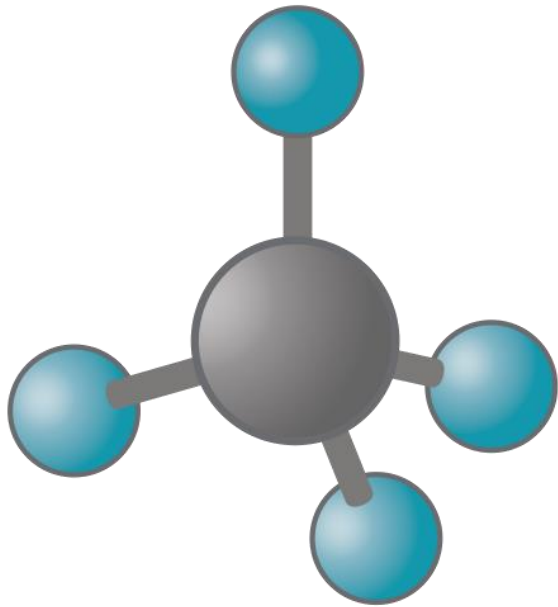
- [1] Climate crisis requires significant action
- [2] Natural gas is a potent greenhouse gas; the electrical grid is rapidly decarbonizing
- [3] Electric appliances are high-performing
- [4] All electric buildings are better buildings



*Major Climate Report Describes a
Strong Risk of Crisis as Early as 2040*



Natural Gas is Mostly Methane



- NATURAL GAS LIQUIDS** | 2 to 7%
- CARBON DIOXIDE** | 0 to 2%
- OXYGEN** | 0%
- NITROGEN** | 0.1 to 1%
- HYDROGEN SULFIDES** | 0.000001%
- Varying amounts of water and sand



Monterey Bay Community Power



Modern electric equipment

Residential

Space Heating



Water Heating



Cooking



Clothes Drying



Commercial



WHERE: 2019 TITLE 24 PART 6

[1] California Building Code (Title 24 of the California Code of Regulations) governs residential and commercial development

- Part 6 - California Energy Code
- Part 11 – California Green Building Code (CalGreen)

[2] Updated every 3 years

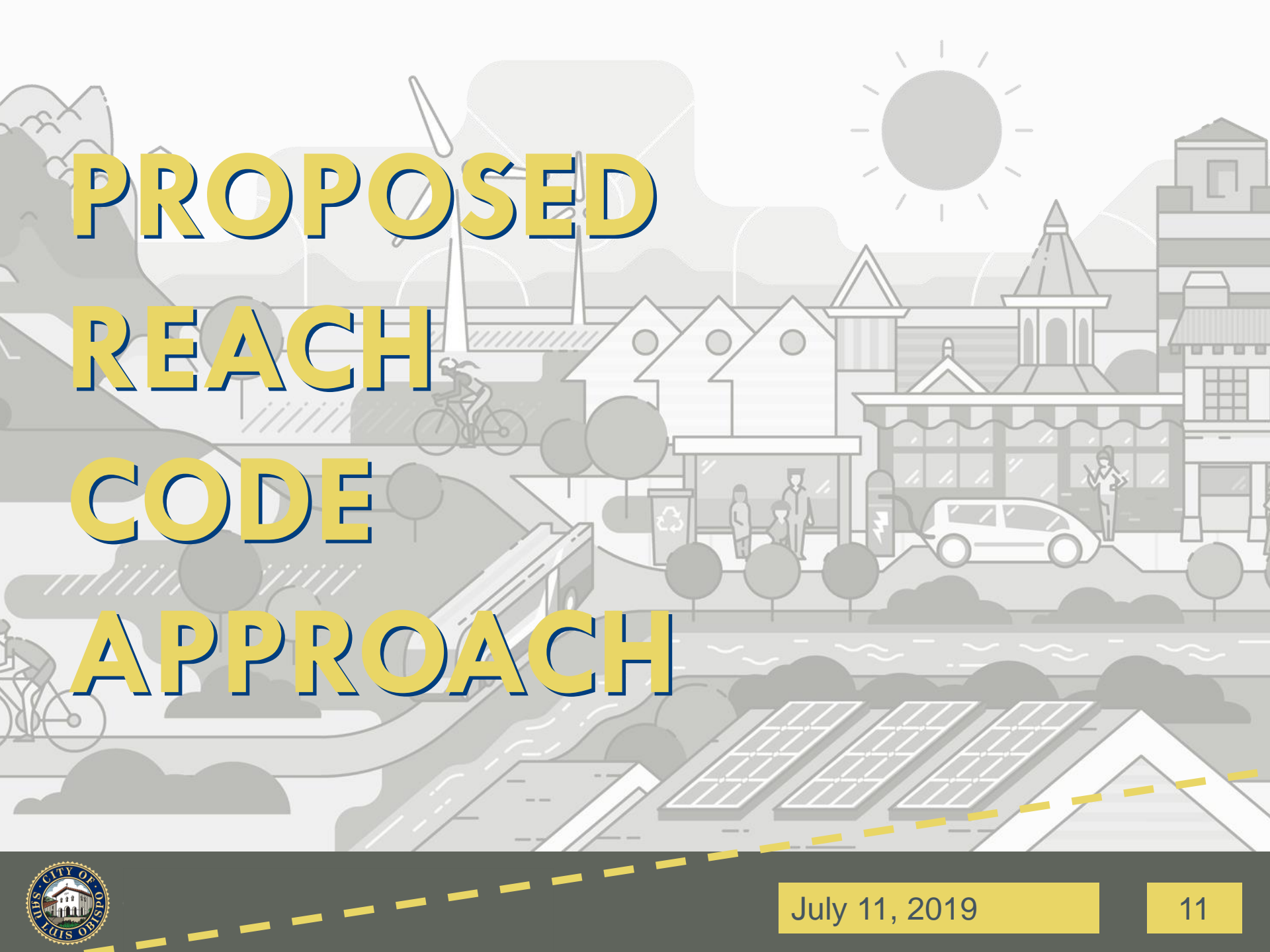
- Next update: Jan 1, 2020; city required to adopt in fall of 2019
- City adopts code with local revisions as deemed fit; Energy Code revisions must be approved by the California Energy Commission



WHERE: 2019 TITLE 24 PART 6 *NEW*

	Residential	Nonresidential
All-Electric Compliance Pathways	Stand-alone compliance pathway	Cost-effective path
Performance Compliance Margin	Efficiency Energy Design Rating (EDR) – PV/Battery EDR = Total EDR	Percentage
Solar Photovoltaics (PV) Installation	Sized to offset annual kWh consumption of mixed-fuel building	<i>n/a</i>
Electric-Ready	125V/20A for future water heater use	<i>n/a</i>





PROPOSED REACH CODE APPROACH



July 11, 2019

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ALL-ELECTRIC REQUIRMENTS

[1] Install solar PV.

[2] Comply with 2019 Title 24
/ modeled by a Certified Energy Analyst.



MIXED FUEL REQUIRMENTS

[1] Install solar PV.

[2] Exceed 2019 Title 24 performance
/ modeled by a Certified Energy Analyst

[3] Include retrofit ready components.

[4] Pay carbon offset in-lieu fee.



MIXED-FUEL PERFORMANCE

BUILDING TYPE	PERFORMANCE REQUIREMENT	REQUIREMENT JUSTIFICATION
Single-family	Total EDR = 10	CalGreen Tier 1
Low-rise multifamily		
Office/retail	15% compliance margin	CalGreen Tier 2
Hotel/motel and high-rise residential	10% compliance margin	CalGreen Tier 2
Other nonresidential with indoor lighting & mechanical	15% compliance margin	CalGreen Tier 2
Other nonresidential with indoor lighting or mechanical, but not both	10% compliance margin	CalGreen Tier 2



MIXED-FUEL PRESCRIPTIVE

[1] Rarely used.

[2] Measures reflect climate zone specific approach to achieve similar EDR or compliance margin as performance approach.



KEY QUESTIONS

[1] Should solar be mandated in non-residential new development?

[2] Should there be a Certified Energy Analyst requirement?

[3] Are there unintended consequences?





PROPOSED “RETROFIT READY” REQUIREMENTS



MIXED-FUEL NEW CONSTRUCTION

- [1] All end uses - 240V branch circuit with conductors within 3' of appliance, clear labeling on both ends of conductor.
- [2] Water & space heating – 30 Amp and drainage/ventilation requirements.
- [3] Clothes drying – 40 Amp.
- [4] Cooktop, range, or oven – 50 Amp.



KEY QUESTIONS

[1] Are the technical (amperage, voltage, location, etc.) requirements appropriate?

[2] Are there unintended/unexpected consequences?

[3] Other questions?



PROPOSED CARBON OFFSET PROGRAM



PROGRAM PROPOSAL

[1] In-lieu of a carbon free building, applicants offset carbon in existing buildings.

[2] Fee based on expected cost of existing program to reduce greenhouse gas emissions.

[3] Focus on retrofitting low income and affordable housing units.



PROGRAM EXAMPLE – NEW OFFICE

Does the project include natural gas?	Yes
Annual modeled natural gas use:	100 Therms
Estimated cost to reduce one therm (annually) in an existing building [EXAMPLE NUMBER]:	\$25.00 / Therm
Offset requirement [EXAMPLE NUMBER]:	2
Total in-lieu fee:	\$5,000



KEY QUESTIONS

[1] Does off-setting based on Therms make sense?

[2] Are there unintended/unexpected consequences?

[3] Other questions?



THANKS!



CONTACT US

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