



Research to Support Sustainable Communities in California

January 29, 2015



AB 32 and Sustainable Communities

- Scoping Plan identified built environment strategies to:
 - Make our communities healthier and more livable
 - Provide more mobility options
 - Create more comfortable and resource efficient homes and workplaces



Sustainable Communities Research



- Crucial to achieving sustainable community goals
- Supports Governor's new 2030 goals
 - 50% renewable electricity
 - Cut transportation petroleum use in half
 - Double energy efficiency of existing buildings

Policy Drivers

Land Use/Transportation Research

- Senate Bill 375
- Governor's new 2030 goals
- Cap and Trade investment quantification

Building Research

- Mandatory State Green Building Code (CALGreen)
- Voluntary green building programs
- State ZNE goals
- Governor's green building EO and new 2030 goals



Decisionmakers

Policy/Program	Responsible Agencies
SB 375 & Transportation Planning	ARB; Caltrans; MPOs; local governments
Cap and Trade investment	ARB; SGC; Caltrans; other state agencies
Green Building Code	BSC; CEC; HCD
Voluntary programs	USGBC; BIG; local governments
Governor's EO	All state agencies
ZNE Goals	CEC; CPUC



Partnerships

- Select Land Use/Transportation Partners:



METROPOLITAN
TRANSPORTATION
COMMISSION



ABAG
ASSOCIATION
OF BAY AREA
GOVERNMENTS



- Select Building Partners:



Dissemination



Forbes

In California, At Least, The Case For Energy Efficiency Is Building



capital public radio

Study: Green Buildings Deliver Climate Benefits

ClimateWire

AN E&E PUBLISHING SERVICE

ENERGY EFFICIENCY:

Money is not the best incentive to save energy -- study

Land Use and Transportation Research



Prioritize strategies



Calibrate models



Update SB 375 targets



Research To Support SB 375

2008

Now

Midterm

Strategy Effectiveness (VMT/GHG impacts)
and Decision Support Tools

Evaluation of
Health/Other Impacts

Tracking Progress
toward SB 375 Goals

SCS Strategy Effectiveness

- **Decision support:**

- VMT impact of 23 strategies, e.g.,

Strategy	% VMT Change
Residential Density(1%)	-0.05 to -0.19%
Telecommuting	-48 to -90% for participant

- *Tool: quantify impact of local context on strategy effectiveness*
- *Finding: strategy location impacts its effectiveness*

- **Empirical studies:**

- *Finding: VMT of LA households near LRT reduced ~10 miles /day*



Co-Benefits

- **Economic** impacts from smart growth [underway]
- **Environmental**
 - *Tool: calculates residential energy savings from more compact development*
 - *Finding: Households in more compact development use less energy*
- **Health** benefits quantification [underway]



Other Impacts

- **Near Roadway Exposure**
 - Literature review
 - *Finding: Traffic management, barriers = promising*
 - Evaluation of mitigation options underway
 - Technical Advisory
- **Displacement**
 - Partnering with SCAG and MTC/ABAG
 - Improving models and evaluating policy solutions
 - Engaging CBOs and other stakeholders



Moving Forward: Decision Support

- Evaluate innovative strategies
- Ensure *all* Californians benefit
- Monitor and accumulate research on best practices
- Track progress toward SB 375 goals



Buildings Research



Green Building Code



Voluntary green building programs



Meet Governor's EO



Ground-truth benefits



Research To Support Green Building

2008

Now

Midterm

Verify GHG reductions
from Green Buildings

Technological feasibility and
cost effectiveness of strategies

Track progress toward
2030/2050 targets

Buildings: Strategy Effectiveness

- Quantification and verification
 - *Tool: Green Building Household Calculator*
 - *Findings for Green Buildings:*
 - *50% less GHGs from water use*
 - *48% less GHGs from waste generation*
 - *5% less GHGs from transportation → largest potential for future reductions*
- Human behavior
 - *Finding: Building operator/occupant behavior = GHG reduction potential*



Technological Feasibility & Cost-Effectiveness

- Climate and health improvements to Green Building Code
 - Measures to make new buildings EV-ready
 - Measures to improve indoor air quality
 - Measures to advance cool roofs and pavements
- New ARB SoCal laboratory → ARB leading by example



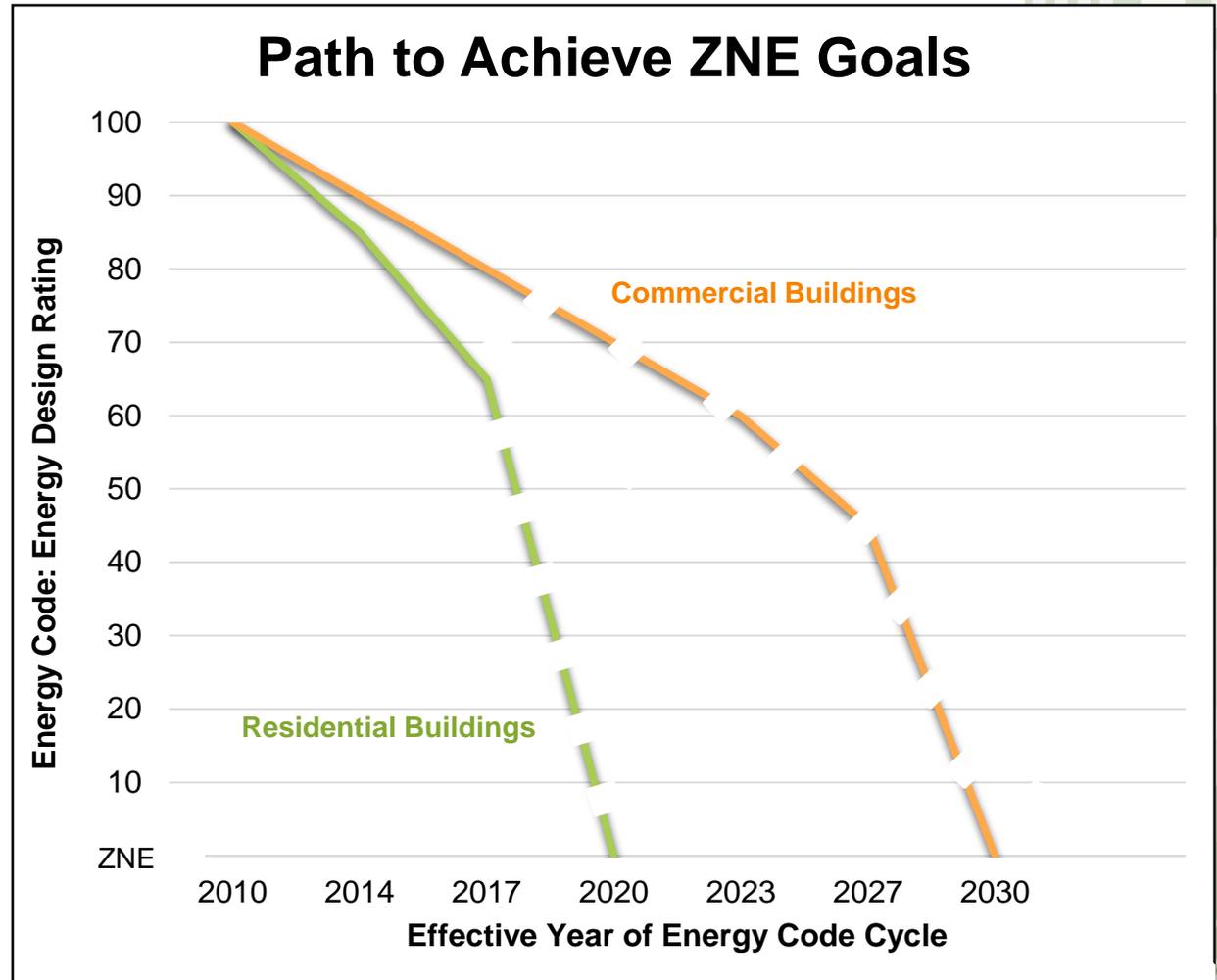
Moving Forward: Green Building Policy

- Propose amendments to Green Building Code
- Explore zero carbon building feasibility
 - Technical feasibility study
 - Exploration of pathways toward transitioning to near-zero net carbon building
- Track progress toward state goals



Tracking Progress

- Additional improvements needed to achieve ZNE goals
- Local governments going beyond requirements



Conclusion

Sustainable Communities Research approved by the Board is supporting:

- SB 375 implementation activities, including maximization of other benefits
- Advancement of state green building policy
- GHG accounting of Cap & Trade investments
- Progress toward Governor's ambitious 2030 goals

