

# CO<sub>2</sub>toEE

*Expanding Building Energy Efficiency Financing for Businesses,  
Cities, Real Estate Owners, Schools and Low Income Housing*

The purpose of CO<sub>2</sub>toEE is to advocate for allowing distributed energy efficiency investments to participate in cap-and-trade programs. We believe that:

- 1) Energy efficiency, especially in buildings, represents the largest untapped opportunity to cut CO<sub>2</sub> emissions deeply and cost-effectively
- 2) Businesses, schools, building owners, and cities that invest in energy efficiency should be able to participate in cap-and-trade and other carbon pricing programs
- 3) Allowing building owners to participate in cap-and-trade programs can be done cost-effectively, and would deepen and make carbon markets more efficient, expand energy efficiency investment, accelerate CO<sub>2</sub> emissions reductions, and have broad secondary benefits, including enhanced competitiveness, increased employment, greater resilience and security, and improved health
- 4) Making this change to cap-and-trade programs, including California's, can and should happen now

## Project Steering Committee:

- **Greg Kats** (Co-Chair) – President, Capital E; Former Director of Financing for Energy Efficiency and Renewable Energy at DOE
- **Donald Kennedy** (Co-Chair) – President Emeritus of Stanford University; Former Editor in Chief of *Science*
- **George Frampton** – Former Chair, Council on Environmental Quality; Former President, The Wilderness Society
- **Rex Hime** – President & CEO, California Business Properties Association
- **Dan Kammen** – Professor and Director, Energy Laboratory, University of California, Berkeley
- **Dennis Murphy** – Chair of USGBC California
- **Brenna Walraven** – President and CEO, Corporate Sustainability Strategies; Former Chair of BOMA International

## Advisory Board:

- **Gregg Ander** – VP, Energy Foundation; Former Chief Architect, SoCal Edison
- **Karin Corfee** – Managing Director, Navigant Consulting
- **Vic Fazio** – Senior Advisor, Akin Gump; Former 10 term US Congressman from N California
- **Anna Ferrera** – Executive Director, School Energy Coalition
- **Dirk Forrister** – President and CEO, International Emissions Trading Association
- **David Freeman** – Former head of SMUD and TVA
- **Denis Hayes/Kathleen Rogers** – EarthDay
- **Hunter Lovins** – Co-Author, Natural Capitalism
- **Frank Loy** – Former Under Secretary of State for Global Affairs; Former Board Chairman, Environmental Defense Fund
- **Nancy Pfund** – Managing Partner, DBL Investors
- **Art Rosenfeld** – Former CEC Commissioner
- **Steve Westly** – Former California State Controller and Chief Financial Officer

## Endorsements Include:

- Alliance to Save Energy
- Association of Corporate Real Estate Executives of Northern California
- ACRE of Southern California
- Autodesk
- BOMA California
- California Business Properties Association
- California Downtown Association
- City of San Francisco
- Commercial Real Estate Development Association
- Earth Day Network

- Enterprise Community Partners
- Institute of Real Estate Management
- International Council of Shopping Centers
- Johnson Controls Inc.
- National Electrical Manufacturers Association
- Retail Industry Leaders Association
- School Energy Coalition
- U.S. Green Building Council
- U.S. Green Building Council-California (all 8 chapters)

- Energy Efficiency is the largest lowest cost opportunity for California to cut CO2 deeply
- Various studies, including by the California Council on Science and Technology (May 2011) find that at current rates of building efficiency improvement, California will not meet its 80% CO2 reduction target.  
<http://ccst.us/publications/2012/2012ghg.pdf>
- To achieve 80% reduction requires that rate of efficiency improvement in existing building increases sharply
- How to move from shallow to deep energy efficiency retrofits?

# Limits of Cap and Trade Program

- Subject to allowance sale proceeds being taken by Governor
- Does not have a mechanism to drive improvements in distributed energy efficiency
- Value of allowances not resulting in significant improvements in energy efficiency

# To meet its CO<sub>2</sub> targets California must move from shallow to deep EE retrofits

- From current shallow retrofits to deep retrofits
- Deep retrofits:
  - Mainstream current energy efficiency technologies/services
  - Accelerate innovation and adoption
  - Expand employment/equity

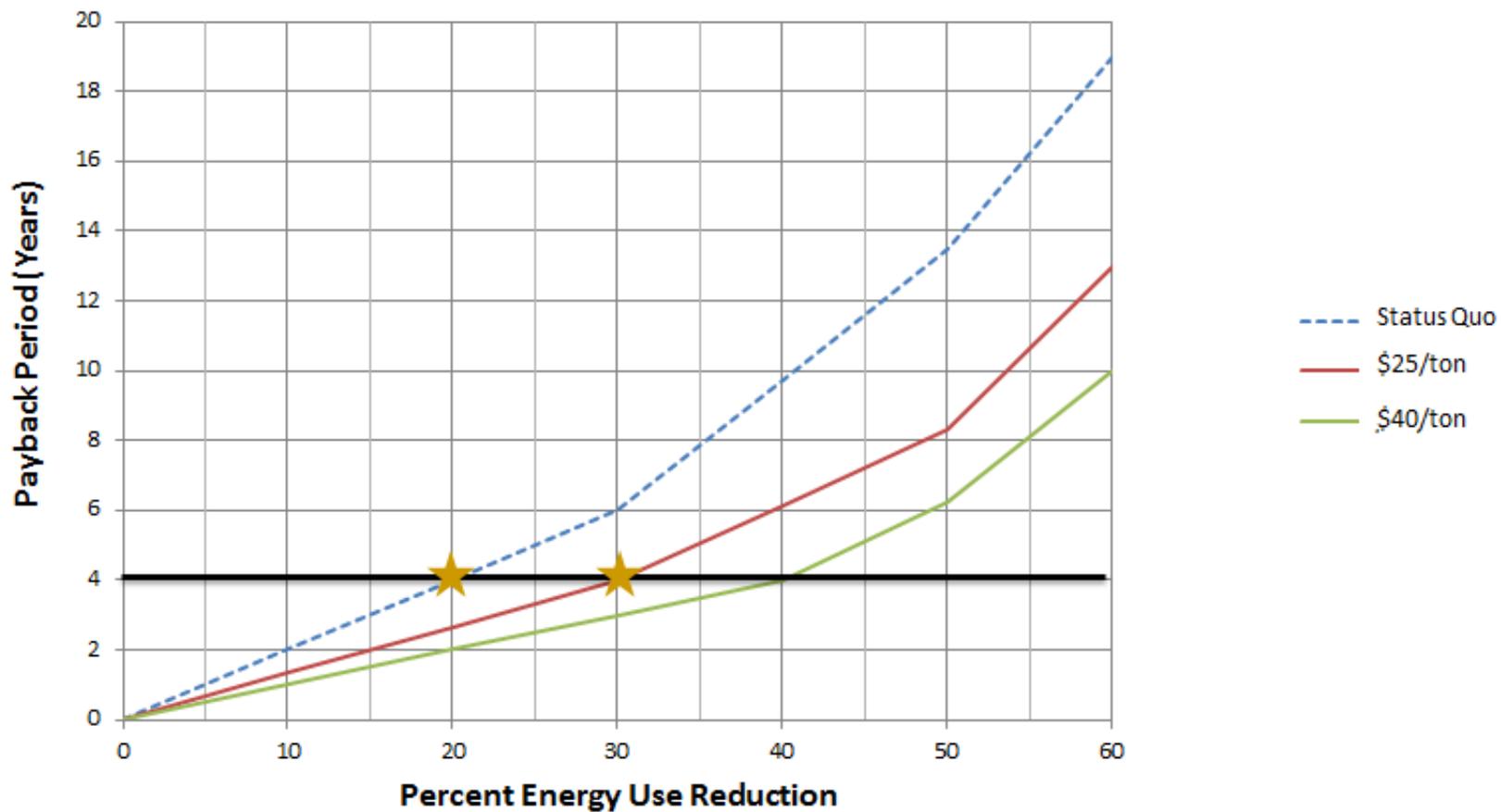
# CO<sub>2</sub> to EE: Statement of Opportunity

- The CO<sub>2</sub> to EE Mechanism moves CO<sub>2</sub>-value from low impact to high impact: Building owners receive value of the CO<sub>2</sub> reductions resulting from their EE investments.
- Enable third-party EE aggregators to efficiently, document and trade/sell CO<sub>2</sub> on behalf of clients investing in EE retrofits
- This would offset a substantial part of the capital costs of the investments.

# CO<sub>2</sub> to EE

- The CO<sub>2</sub> to EE Mechanism would reward businesses and building owners the value of the CO<sub>2</sub> reduction that occurs as a result of their EE investments.
- At a CO<sub>2</sub> price of \$15- \$20/ton, value of CO<sub>2</sub> would offset about 20% of the capital cost of the EE investment.
- This model creates a >10x larger price signal than that of the status quo.
- Upfront payments for CO<sub>2</sub> reduction allow for increased debt financing.
- Assuming 50% leverage and a CO<sub>2</sub> price of \$30/ton, it would offset ~ 50% of the capital cost of comprehensive EE upgrades.

## CO<sub>2</sub>-to-EE Mechanism: Illustrative Impact



Assumes upfront payment from CO<sub>2</sub>toEE enables debt financing

Black line indicates 4-year payback period

# CO2 to EE Implementation

- Competitive Mechanism to be administered by a PUC or CEC -managed third party (eg the Energy Conservation Assistance Act (ECAA) Program.
- Aggregators could include ESCOs, energy aggregators, smart-grid operators, emissions brokers, etc.
- Initial participants expect to include commercial, schools and multi-unit affordable

A. Establishment

California Energy Commission  
(or equivalent)

screens,  
selects,  
and manages

Qualified  
Aggregators

B. Operation

② trade  
aggregated  
CO<sub>2</sub>  
reductions

Cap-and-Trade  
Market

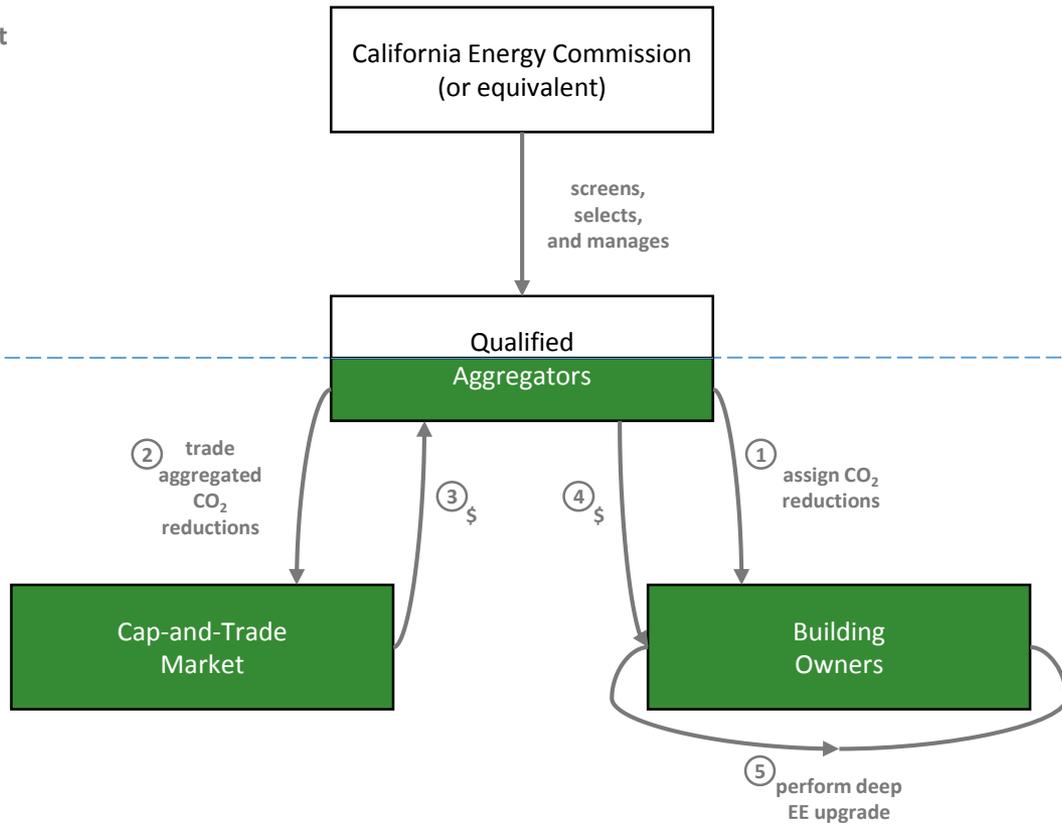
③ \$

④ \$

① assign CO<sub>2</sub>  
reductions

Building  
Owners

⑤ perform deep  
EE upgrade



# CO2 to EE Administration

- CO2 to EE might:
  - Utilize Industry-Standard M&V Protocol
  - Establish accounting, record-keeping and auditing requirements for certified firms.
  - Retain a function of QA/sampling to verify and certify that energy savings occur, with penalties for errors and misrepresentations.
  - Hold-back a portion of the allowance payment to the intermediary until energy savings are confirmed.

## CO<sub>2</sub>toEE: post-pilot

- Once refined and demonstrated in pilot, CARB is interested in including the mechanism, in part because it provides for a broad market-based mechanism to allow building EE to participate in the Cap and Trade market.
- Aggregators that meet performance, volume and other criteria would perhaps be considered by CARB as qualified entities.

# Endorsement by GBC California

- “The eight GBC chapters in California with our 15,000+ members are strong proponents of the CO2 to EE initiative because it would move the value of CO2 to where it has greatest impact – with the building owners making EE investment decisions.”
- “CO2 to EE would access the very large distributed EE market, without which California cannot cost effectively meet its 2050 CO2 reduction targets.”
- “CO2 to EE would also provide a major new source of funding for schools to become more efficient and greener.”

# Endorsement by California Business Properties Association

**California Business Properties Association** serves as the California legislative and regulatory advocate for individual companies as well as the International Council of shopping Centers (ICSC), the California Chapters of the Commercial Real Estate Development Association (NAIOP), the Institute of Real Estate Management (IREM), the California Downtown Association (CDA), the Retail Industry Leaders Association (RILA), ACRE of Northern California, and ACRE of Southern California, *making CBPA represent over 11,000 Californian companies.*

- “CO2 to EE would harness the new CO2 market to efficiently drive deeper investments in energy efficiency by California’s business and real estate industries. We have been one of the sponsors of this effort.”
- “By allowing businesses and real estate owners to secure the value of the CO2 reductions that result directly from their EE investments, the program would harness the market to drive much deeper and more comprehensive EE retrofits. This program provides a very cost effective way to directly harness and access the distributed EE market, and would allow California to achieve its target CO2 reductions more efficiently and in a way that strengthens California’s business and real estate industries.”

# Endorsement from Johnson Controls Inc.

Johnson Controls has reviewed and provided input on the proposed CO2-to-EE initiative, and we strongly support it as a cost-effective way to increase demand for energy efficiency retrofits. We also believe that a CO2-to-EE pilot is a desirable step in refining the CO2-to-EE model, and we strongly urge the ARB to fund the \$15 million pilot. Johnson Controls would be interested in serving as one of the energy efficiency aggregators in the pilot.

The CO2-to-EE initiative is unique in that it allows businesses and building owners to benefit up front and directly from multi-year CO2 reductions. Energy efficiency improvements require upfront capital investments that are paid for over time through energy cost savings. In our 2012 Energy Efficiency Indicator research study of 1,100 US/Canadian facility and energy management executives, lack of funding to pay for improvements and insufficient payback/ROI were found to be the largest barrier to investment. Payback requirements are generally less than three years which precludes deep retrofits involving HVAC equipment, controls, or envelope improvements from even being considered. The CO2-to-EE initiative will help "buy down" the initial project cost, allowing more building owners to make improvements or building owners planning improvements to make more significant improvements.

# NEMA Endorsement



“The National Electrical Manufacturers Association (NEMA) would like to formally endorse the CO2toEE initiative. As the trade association representing more than 400 electrical equipment manufacturers that make the products used in the generation, transmission, and end-use of electricity, NEMA is fully supportive of policies that promote energy efficiency. We believe that by allowing building owners and energy efficiency project aggregators to participate in the California cap-and-trade program, the State of California can effectively promote deeper investments in energy efficiency – the cleanest, cheapest way to meet the state’s growing energy needs.”

“By seeking to leverage the California cap-and-trade market to promote energy efficiency investments, the CO2toEE initiative will encourage building owners to make deeper energy efficiency investments than they would without being compensated for the resulting carbon reductions. We recognize that this effort is in its early stages, but we believe it is a concept worth pursuing with the appropriate entities in California. This will not only save energy and reduce emissions, but it has the potential to create manufacturing and construction jobs and contribute to California’s economy.”