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ANALYSIS OF CALIFORNIA'S PROPOSITIONS 7 AND 10: RENEWABLE ENERGY MANDATES AND HANDOUTS

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POLICY
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Part 1

Introduction

California has just set out on a highly ambitious mission, a decades-long effort to reduce greenhouse gas emissions to the equivalent of 1990 levels by 2020, and 80 percent below 1990 levels by 2050.¹ Two propositions on the California General Election ballot for November 4 exemplify the kind of bold thinking that makes the state an environmental and economic leader: Proposition 7, which would raise state standards for renewable energy procurement, and Proposition 10, which would authorize bonds to finance a variety of alternative energy research and development. Unfortunately, the two propositions fail to transcend the legislative short-sightedness that has burdened California with high budget deficits and poor economic performance in recent years.

Proposition 7 would require unprecedented and costly alternative energy acquisitions that far exceed the alternative energy goals set by Governor Schwarzenegger, state legislators, state energy agencies and expert advisors to the California Air Resources Board for the purpose of reducing greenhouse gas emissions. The goal set by Proposition 7 probably can't be met, which will mean penalties on utilities that will be passed on to customers as rate increases. Worse, it would mean diverting state revenues and household budgets away from more cost-effective greenhouse gas emission reduction strategies. Tough economic times mandate that we are allowed to use the most cost effective means to reduce greenhouse gases.

Proposition 10 is likewise badly flawed. It gives subsidies to people who already buy clean energy cars or solar or wind, and of course lots of grants to some special interest companies that are pushing for this plan. It would not effectively increase the use of alternative energy. Worse, among other provisions, it would give out rebates (at an eventual taxpayer expense of more than \$1 billion) to buyers of the Honda GX CNG, a natural-gas-powered car that emits more greenhouse gases than the more popular and more easily fueled Toyota Prius. The \$10,000 rebate to Honda natural gas car buyers comes as no surprise, as this proposition is bankrolled by T. Boone Pickens, founder of Clean Energy Fuels Corporation, a company that makes natural gas refueling stations. Pickens has already secured at least \$107 million in public grants for its private projects and would almost certainly line up more contracts with the money provided in Proposition 10.

This situation has prompted another California rarity: virtually every major environmental group in California opposes Proposition 7, and Proposition 10 has earned criticism from the state's top energy experts.²

Part 2

Overview of Proposition 7 and Proposition 10

Proposition 7 would change the state’s Renewables Portfolio Standard (RPS), a law which requires certain state electricity providers to procure electricity from eligible “renewable” energy sources such as wind, biomass, landfill gas, geothermal, small hydroelectric, solar thermal and solar photovoltaic generation.³ The proposition would also re-assign some responsibilities between two of the state’s energy agencies—the California Public Utilities Commission (PUC) and California Energy Commission—and expand authority to permit electricity generating facilities and transmission lines.

Establishes additional, higher, broader RPS targets. Proposition 7 adds two higher RPS targets to the state’s existing target of procuring 20 percent of retail electricity sales from eligible renewable sources by 2010. Proposition 7 would add a 40 percent target by 2020 and a 50 percent target just five years later, by 2025. The proposition would also extend the RPS to include publicly owned utilities, which supply about one-fifth of electricity consumed in California.

Changes the market price referent. Currently, each year the PUC determines a benchmark price for energy, called the “market price referent,” for determining which renewable energy bids are above and below “market cost.” Bids priced above this benchmark price may be accepted, but the generator must provide convincing rationale for the higher contract price. Presently, the benchmark price is based on the “levelized” (a technical type of average) cent-per-kWh cost of a long-term contract with a combined cycle gas turbine facility. In this way, renewable energy bids can be compared to traditional gasoline energy. Proposition 7 would make the Energy Commission, rather than the PUC, responsible for determining the market price referent and would add the “value and benefits of renewable resources, including but not limited to hedging value and carbon emissions reductions,” to the criteria for determining this benchmark price.⁴ Proposition 7 would then also require that all bids up to and 10 percent higher than the benchmark be accepted by each regulated provider (up to the amount of renewable energy each provider is obligated to procure in a given year).

Revises RPS contract periods. Proposition 7 would require all electricity providers to offer minimum 20-year contracts to renewable energy generators, which is double the current standard contract period.

Changes penalties for failing to meet annual RPS obligations. Proposition 7 lowers the rate of penalties currently assessed on electricity providers who fail to sign enough contracts for renewable energy from five cents to one cent per kWh, but removes the current cap on penalties for any given year. Thus, penalties charged to electricity providers have the potential to be much larger under the proposed law. The measure states that no electricity provider should pass penalties down by increasing rates charged to their customers, but the Legislative Analyst's Office has noted that publicly owned utilities typically have no revenue aside from rates paid by customers, and therefore no recourse but to pass penalties down to rate payers.⁵

Expands the Energy Commission's permitting authority. Currently, permitting authority for an electricity generating facility depends on both the type and size of the facility. Under existing law, wind turbines and nonthermal solar power plants are permitted by local government. Under Proposition 7, nonthermal renewable energy power plants capable of producing 30 megawatts of electricity or more, and related transmission lines, would instead be permitted by the Energy Commission. New transmission lines within the electricity transmission grid are currently permitted by the PUC. Proposition 7 would give the Energy Commission permitting power over new transmission lines for the purpose of meeting the RPS. The Legislative Analyst's Office states, "It is unclear, however, whether the measure has removed PUC's authority in giving it to the Energy Commission."⁶

Proposition 10 would create the authority to sell \$5 billion in general obligation bonds for a variety of alternative fuel, solar, and other renewable energy projects.

Creates the Clean Alternative Fuels Account. The majority of the funds created by the bond sales (58 percent) are directed to be spent within five years on \$2.9 billion in rebates for purchase and lease of high fuel economy and alternative fuel vehicles, as defined by the proposition. An additional \$550 million in the same account would be used in the next five years to fund research and demonstration projects of these same types of vehicles. The state is directed to spend any funds left in this account after five years in furtherance of the general goals of the proposition.

Creates the Solar, Wind and Renewable Energy Account. The second-largest share of the remaining bond authority is \$1.3 billion (26 percent) to be awarded over the next 10 years to developers of electric generation technology that reduces greenhouse gas emissions. That sum includes at least \$800 million in financial incentives for solar technology and \$200 million in equipment to produce renewable energy.

Creates the Demonstration Projects and Public Education Account. Two hundred million dollars would be provided in grants of \$25 million each to the cities of Los Angeles, San Diego,

Long Beach, Irvine, San Francisco, Oakland, Fresno and Sacramento for the construction of unspecified alternative and renewable energy demonstration projects.

Creates the Education, Training and Outreach Account. Finally, \$125 million would be allocated to public universities and colleges, mostly for staff training and tuition assistance for alternative fuel and “clean energy technology” commercialization. Of that, a minimum of 20 percent would be used for public outreach and education.

Proposition 10 specifies that not more than 1 percent of the funds in each account may be expended for the purpose of administering the grants. The Legislative Analyst’s Office report found that this provision may leave various state departments with insufficient funds to implement the program, resulting in additional, unfunded administration costs of up to about \$10 million annually through 2019. Including just the principal and interest on the bonds, Proposition 10 would cost the state \$335 million annually, paid out of the General Fund for the next 30 years.⁷

Proposition 7 Overview from the Legislative Analyst’s Office

- Establishes additional, higher RPS [Renewables Portfolio Standard] targets for electricity providers.
- Makes RPS requirements enforceable on publicly owned utilities.
- Changes the process for defining “market price of electricity.”
- Changes the cost cap provisions that limit electricity provider obligations under the RPS.
- Expands scope of RPS enforcement.
- Revises RPS-related contracting period and obligations.
- Sets a lower penalty rate in statute and removes the cap on the total penalty amount for failure to meet RPS requirements.
- Directs the use of RPS penalty revenues.
- Expands Energy Commission’s permitting authority.

Fiscal effects:

- Increased Energy Commission [Energy Resources Conservation and Development Commission] costs (approximately \$2.4 million).
- Increased PUC [Public Utilities Commission] costs (up to \$1 million).
- Uncertain effect on local government administrative costs.
- Unknown effect on state and local government costs.
- Unknown effect on state and local government revenues.

Source: California Legislative Analyst’s Office, *Proposition 7: Renewable Energy. Statute*, http://www.lao.ca.gov/ballot/2008/7_11_2008.aspx, July 17, 2008.

Proposition 10 Overview from the Legislative Analyst's Office

Authority to sell a total of \$5 billion in general obligation bonds. In millions of dollars:

- Clean Alternative Fuels Account (\$3,425)

Rebates—Ranging from \$2,000 to \$50,000 per rebate.....	\$2,875
High Fuel Economy Vehicles.	(\$110)
Very High Fuel Economy Vehicles.	(\$230)
Dedicated Clean Alternative Fuel Vehicles, light-duty.	(\$550)
Dedicated Clean Alternative Fuel Vehicles, light-medium-duty.....	(\$310)
Dedicated Clean Alternative Fuel Vehicles, heavy-medium-duty.	(\$650)
Dedicated Clean Alternative Fuel Vehicles, heavy-duty.	(\$1,000)
Home refueling station rebates (\$2,000 per rebate).	(\$25)
Financial incentives—Research, development, and demonstration of alternative-fuel and high-efficiency vehicles, and alternative fuels	\$550
- Solar, Wind, and Renewable Energy Account (\$1,250)

Financial incentives—Research, design, development, construction, and production of electric generation technology that reduces generation cost and greenhouse gas emissions	\$1,000
Financial incentives—Equipment to produce electricity from renewable resources	\$250
- Demonstration Projects and Public Education Account (\$200)

Grants to local governments—Construction and operation of alternative and renewable energy demonstration projects	\$200
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- Education, Training, and Outreach Account (\$125)

Grants to public universities and colleges—Staff development, training, research, and tuition assistance for alternative fuel and clean energy technology commercialization and workforce development.....	\$125
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Fiscal effect:

- Bond costs (about \$335 million per year for 30 years).
- Impact on state sales tax revenues (potential increase of tens of millions of dollars).
- Impact on local revenues (increase of tens of millions of dollars).
- State administrative costs to implement the measure (about \$10 million annually).

Source: California Legislative Analyst's Office, *Bonds: Alternative Fuel Vehicles and Renewable Energy. Statute*, http://www.lao.ca.gov/ballot/2008/10_11_2008.aspx, July 17, 2008.

Part 3

Cleaning up California's Energy Supply

The transportation and energy sectors currently account for 38 and 25 percent of greenhouse gas emissions in California, respectively.⁸ The Global Warming Solutions Act of 2006 and related legislation have created new impetus for procuring renewable and alternative energy supplies, but California has already been aggressively pursuing these sources, along with energy conservation measures, for more than 30 years. In part due to these policies, California's energy sector is unique. For example, while nationwide per capita electricity consumption has grown by almost 50 percent over that period, California's per capita consumption has remained flat. Californians use less electricity per person than residents of any other state.⁹ Meanwhile, Californians also pay higher average retail electricity rates than any other western state (13.49 cents per kWh).¹⁰

For the past five years, California's energy policy has relied on a "loading order" protocol for meeting the state's increasing energy demand. The loading order specifies that new demand be addressed first with energy efficiency and demand response; second, with renewable energy and distributed generation; and finally, with high-performance fossil-fueled sources and infrastructure improvement.

California already has one of the most ambitious Renewables Portfolio Standards (RPS) in the country. The standard, established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, requires most of the state's retail electricity providers to make annual progress toward a target of procuring 20 percent of retail electricity sales from eligible renewable sources by 2010. The California Public Utilities Commission (PUC) and Energy Commission implement the program. Investor-owned utilities (including Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric), electric service providers, and community choice aggregators are all subject to the RPS. Publicly owned utilities (including the Los Angeles Department of Water and Power and the Sacramento Municipal Utility District) are not subject to the state RPS terms, but are required to set roughly comparable renewable energy targets of their own.

Governor Schwarzenegger, state legislators and the state energy agencies have committed to evaluating a further renewable energy target of 33 percent by 2020. Most recently, the California Air Resources Board identified this target as a component in the strategy for meeting the state's

greenhouse gas reduction goals. Evaluation of this new goal has just begun, but some observations and predictions about the 33 percent by 2020 RPS have already been made. A PUC report released in July made the following findings:¹¹

The magnitude of the 33% RPS implies costs, GHG [greenhouse gas] emissions and new operating and planning challenges that are not yet fully understood.

It is worth noting that reaching the 20% goal in 2013 would leave the IOUs only 7 years to achieve the 60% increase in RPS generation needed to reach a 33% target in 2020.

Serving 33% of California's electricity needs with renewable sources will require an infrastructure build-out on a scale and timeline perhaps unparalleled anywhere in the world.

The formidable challenge of the 33 percent by 2020 target puts Proposition 7 in perspective. While the state is struggling to comply with the existing program, Proposition 7 would pile on the even higher target of 40 percent by 2020 and 50 percent by 2025.

In a recent *Los Angeles Times* report, Proposition 7 campaign spokesman, former San Francisco supervisor, Jim Gonzalez, seemed to reveal a shallow understanding of California energy policy when he remarked that utilities oppose the 40 percent by 2020 RPS proposal because “that would let them continue their addiction to coal.”¹² In reality, California already gets far less of its electricity from coal than the national average (17 percent as opposed to 49 percent) and already has laws in place intended to phase out remaining conventional coal baseload generation contracts (emission performance standards created by Senate Bill 1368, signed by Governor Schwarzenegger in 2006). California relies on natural gas, not coal, for the largest share of its electricity supply (45 percent).

Performance standards are already in place in the transportation sector as well. Federal corporate average fuel economy (CAFE) standards will mandate combined car and truck fleet average efficiency of 35 miles per gallon by 2020, an increase from the long-time passenger car standard of 27.5 miles per gallon. California's vehicle greenhouse gas regulations are even more stringent. Vehicle scrap programs, discussed in further detail below, are another part of the state's existing strategy for cleaning up the transportation sector.

Part 4

Problems with the Propositions' Approaches

A. New RPS Would Perpetuate Failings of the Current Renewable Energy Program

California is not on track to meet the 2010 target for the current RPS. So far, renewable energy procurements have not kept pace with the increase in total energy consumption since the enactment of the renewables portfolio program, and the share of eligible renewable energy sources in the state's electricity mix stands essentially unchanged at 11 percent. Current projections show that, at best, the investor-owned utilities may hit 20 percent renewable generation by 2013.¹³ Proposition 7 authors ignored this clear evidence that mandates alone don't create renewable energy when they selected an arbitrary new electricity procurement target for the state.

Aside from the subsidies required to make these sources cost-competitive, lack of transmission capacity is the greatest barrier to developing more renewable energy generation for the California grid. The state's transmission infrastructure was not built with renewable generation in mind. The approval process required for new transmission is lengthy and contentious, and many delays during the process are out of the control of either the PUC or the Energy Commission. By mandating contracts with increasingly dispersed renewable energy facilities, Proposition 7 would require development of an expansive and robust transmission system, but the proposition does not provide the funding to build this additional transmission. Meeting the current RPS will require, according to one estimate, two new major transmission lines at a cost of \$3.5 billion. Meeting the Proposition 7 target would likely require several times that investment.¹⁴

Proposition 7 would make administration of the current RPS more difficult and costly. Among other provisions discussed here, the proposition would also expand and create duplicative responsibilities between the Public Utilities Commission and the Energy Commission, at a rate payer expense of an estimated \$3.3 million annually.¹⁵ In re-assigning permitting authority for such transmission to the Energy Commission without removing authority from the PUC, the proposition would further complicate interagency permitting relationships. The PUC legal counsel's analysis of the proposition concluded:¹⁶

[I]f a proposed transmission line carries both renewable energy and non-renewable energy, it is unclear which governmental agency has authority over the siting of this transmission line—and from a technical standpoint, this disconnect in the Proposition is unresolvable. Further, electrical utilities would be regulated by two governmental entities rather than one for largely the same infrastructure and the same issues using similar legal processes. This is duplication of regulatory oversight without obvious benefit. Such a conflict would likely contribute to challenges the state has faced thus far in building the necessary transmission infrastructure to access renewable generation.

The PUC’s analysis also found that Proposition 7 “falsely states that it will cap rate impacts at less than 3 percent,” and “the stated intent of Proposition 7 to limit rate increases is intrinsically at odds with the economic realities of what it will take to achieve the renewable energy implementation goals that the proposition sets. Put another way, the 3 percent cost cap in Proposition 7 may actually result in less renewable energy than the amount prescribed under the existing 20 percent and potential 33 percent mandate if the cost cap is hit at a lower level of renewable penetration.”¹⁷

Proposition 7 also apparently limits eligibility under the state RPS to facilities that generate 30 megawatts or more. That would make 17 percent of the operational capacity of the current RPS no longer count, and the majority of contracts currently in the system (whether operational, scheduled, or pending approval) ineligible.¹⁸

There are serious questions about transmission infrastructure, grid reliability and utility rates that need to be answered before the state can consider increasing its RPS. Moreover, the changes to state law created under Proposition 7 could only be amended by a two-thirds vote of both houses of the legislature and the governor’s approval, or voter approval of another ballot initiative, so it would be hard to fix the problems it creates in the future.

B. Raising Energy Costs Counter-Productive to Reducing Greenhouse Gas Emissions

Because the Proposition 7 target overshoots the goal set by the governor, legislature, and energy agencies for reduction of greenhouse gases (33 percent by 2020), the state will waste money on expensive energy projects that could be used in more cost-effective efforts to reduce greenhouse gases outside of the electricity sector.¹⁹

For example, preliminary analysis indicates that raising the RPS to 33 percent by 2020 will require virtually all new electricity procurements to come from eligible renewable sources.²⁰ That suggests that the higher RPS invented by Proposition 7 would require retiring non-renewable generating capacity early—either by selling it to states with lower renewable energy quotas or by shutting power plants down.

The proposition locks utility companies into long, 20-year contracts with generators, potentially binding rate payers to expensive, outdated technologies even as far more cost-competitive renewable energy sources, energy-saving technologies and other greenhouse-gas-cutting opportunities are available now and in coming years.

Estimates about the effects of the higher RPS on electricity prices depend on underlying assumptions about the price of natural gas in the future and the relationship between natural gas prices and renewable energy prices. RPS proponents generally argue that such standards bring the cost of renewables down by stimulating investment and creating greater economies of scale. However, in creating artificial demand, these same standards can also create overnight supply shortages, resulting in higher prices rather than lower prices. For example, wind generation in particular has seen cost increases recently as a result of high demand for turbine technology components produced almost exclusively in Europe.²¹ Capital-intensive renewable power plants rely on materials, such as steel, that are subject to world markets as well.

Adding renewable energy sources to the generation portfolio is often touted as a hedge against volatile natural gas prices; however, renewable energy suppliers react to changes in natural gas prices too. In the short time that California's investor-owned utilities have been seeking contracts under the current renewables portfolio program, renewable energy suppliers have responded to higher natural gas prices by increasing their bids.²² In fact, bid and contract prices have increased overall since the RPS program began.²³ In addition to unknown variables such as the price of natural gas and speculative renewable energy technology breakthroughs, adoption of RPS and greenhouse gas emission regulations both among other western states and at the national level will have a very significant bearing on California's renewable energy procurement.

Proponents of Proposition 7 declare that the higher RPS won't increase electricity rates by more than 3 percent, but the Legislative Analyst's Office has determined that "the measure includes no specific provisions to implement or enforce this declaration."²⁴ The solar thermal generation favored by the proposition's authors is still two to four times more expensive than electricity from natural gas (20 to 40 cents per kWh as compared to 9 cents for natural gas).²⁵ Southern California Edison projects that meeting a 33 percent standard by 2020 may entail renewable energy prices 25 percent above the market price referent.²⁶

Proposition 7 proponents have relied on cost estimates for the 33 percent standard to make claims about their much higher proposal. Even if the limited analyses conducted so far for the 33 percent standard are accurate, it is wrong to assume that those costs would not increase at an ever faster rate as the level of renewable generation sought increases.

Proposition 7 does not provide a mechanism to pay for the higher costs of renewable electricity—instead, it applies wishful thinking that the costs will be small, and "prohibits" the penalties paid by utilities (when renewable sources aren't available) from being passed down to rate payers. The Legislative Analyst's Office report states, "It is unclear how this prohibition will apply."²⁷ Higher

electricity bills would affect Californians not only as rate payers, but as tax payers, as state and local governments are electrical consumers as well.

These things add up to spending more to get relatively little in greenhouse gas reductions—not much bang for the buck. Many reports have outlined more cost effective ways to reduce greenhouse gas emissions, ranging from changing forestry practices and other ways to “sequester” carbon, to incentives to move freight on rail instead of by truck.²⁸ Our limited state and household budgets in these tough economic times would be better used on such cost effective measures than on the unrealistic mandates in Proposition 7.

Finally, if a primary goal of the state’s energy policy is to decrease greenhouse gas emissions from electricity generation, then the emphasis should not be on so-called “renewable” sources, but instead on low-emission sources. More politically neutral mechanisms, such as emissions performance standards or pollution markets for greenhouse gas emissions would be a better approach.

C. Expensive Bond Financing for Non-Infrastructure Projects

Proposition 10 would take \$10 billion dollars out of the state General Fund over the next generation without building any significant, lasting infrastructure—in fact, most of the money (\$2.9 billion not including interest) would be spent on rebates for the purchase of new vehicles that won’t necessarily even be used in the state, and additional amounts would be used for intangible benefits such as staff development (\$125 million) and research and design (up to \$1 billion). If these projects should be funded in the first place, they certainly should not be financed over a period of decades from the state’s General Fund. Taxpayers will be paying off these obligations for the next 30 years, no matter how much state priorities might change in the meantime, and, adjusted for inflation, the measure will cost 30 percent more (30 cents into the pockets of bond holders for every \$1.00 spent on California programs) than if the programs had been paid for directly.

This is an exceptionally poor time for the state to enter into additional bond debt. California already faces a \$15 billion budget deficit. Now, just two years after approving the last bundle of bonds, voters are faced with another ballot potentially totaling yet another \$16.8 billion in additional bonds. In November 2006, California voters approved \$42.7 billion in bonds. Given just the bonds already authorized, the Legislative Analyst’s Office expects the state’s debt-service payments to climb to 6.2 percent of the state’s annual revenue in 2011–12.²⁹ Such high debt-service payments crowd out other General Fund programs, without a serious process of prioritization, and potentially raise the interest rates being charged on bond debts overall.

D. Ineffective Rebates for Wealthier Californians, Corporate Hand-Outs

The largest share of bond funds authorized in Proposition 10, \$2.9 billion, would be spent on rebates to individuals and businesses for the purchase or lease of new or repowered vehicles.

Rebates in the amount of \$2,000 each would be available to buyers or lessees of any new “high fuel economy vehicle,” that is, a light-duty vehicle that “can achieve a combined fuel economy of not less than forty-five (45) miles per gallon for highway use as determined by the United States Environmental Protection Agency.”³⁰ Assuming that the benchmark for qualification under this section is the federal combined fuel economy rating, only one vehicle, the Toyota Prius, would currently qualify for these rebates. The combined fuel economy rating for the 2008 Toyota Prius is 46 miles per gallon.³¹ The second-highest combined fuel economy rating, given to the 2008 Honda Civic Hybrid (42 mpg), would not qualify under the proposition’s definition.

Additionally, the proposition would make rebates available in the amount of \$4,000 each for the purchase or lease of a “very high fuel economy vehicle,” light-duty vehicles with a combined fuel economy of not less than 60 miles per gallon. Using the same benchmark, no vehicle currently on the market would qualify for these rebates.

Rebates in the amount of \$10,000 each would be available on a first-come, first-served basis to individuals or businesses buying or leasing a new or used “dedicated clean alternative fuel” vehicle weighing less than 8,500 pounds. The only new passenger car that would qualify for rebates under this provision is the 2008 Honda GX CNG, the natural-gas-powered Civic. There are only a few dozen public, 24-hour compressed natural gas fueling stations in California, so the proposition would provide an additional \$2,000 for each of the natural-gas-powered car owners to build home refueling stations.

The bulk of the vehicle rebate funds, 68 percent, would be given to individuals and businesses in grants of \$25,000 to \$50,000 each for purchasing or leasing natural gas vehicles weighing more than 8,500 pounds (mostly commercial vehicles).³² There is no requirement that rebate recipients live or work in California, so commercial drivers could capture these grant funds and take their vehicles out of the state, at significant cost to California tax payers but no appreciable benefit in state-allocated greenhouse gas emissions.

Proposition 10 bankroller, T. Boone Pickens, has a vision of switching the U.S. vehicle fleet over to natural gas that is unrealistic and self-serving. Clean Energy Fuels Corporation, founded by Pickens, has already secured at least \$107 million in public grants for its private projects, including building natural gas filling stations.³³ The company would almost certainly line up more contracts with the money provided in the proposition. At the same time, energy experts overwhelmingly agree that natural gas has more value in the electricity sector than in the transportation sector. In fact, low natural gas prices will only become more important as the nation transitions toward less carbon-intensive energy sources. Natural gas will remain the backbone of the California energy grid for some time, providing backup and peaker generation when intermittent renewable power sources fail to meet demand. Natural gas will also potentially replace portions of the coal-fired electrical sector, and power plug-in electric and hybrid vehicles as these gain popularity.

Of the two passenger cars that qualify for rebates under Proposition 10—the Toyota Prius and Honda’s compressed-natural-gas-powered Civic—the proposition favors the car with worse

greenhouse gas efficiency. According to federal fuel ratings, the natural gas vehicle emits 35 percent more carbon dioxide than the Prius, but Proposition 10 allocates \$550 million in this category, five times the amount allocated to the Prius.³⁴ Since the rebates are to be doled out over the next five years, they won't spur technological innovation, they'll merely reward those who are already fortunate enough to be able to afford a high-priced, high-efficiency car.

There are two problems with this approach. First, since the rebates are intended to be paid out over a very short time frame, the funds will not accelerate or incentivize changes in automobile technology. Instead, the rebates simply subsidize the cost of a select number of vehicles that are already on the market or planned in the near future.

Second, the passenger car rebates will disproportionately end up lining the pockets of Californians who already have the means to buy higher-priced high-efficiency vehicles. Rebates are not targeted at people who cannot now afford a high-efficiency vehicle—everyone buying the cars gets them—so the relatively wealthy folks already buying the cars will get most of the rebates. According to research by J.D. Power and Associates, in 2004 hybrid owner household incomes were \$100,000 a year versus \$85,000 a year for the average new car buyer, and hybrid car buyers continued to report much higher household income than the average new vehicle buyer in 2008.³⁵ Other surveys of Toyota Prius drivers indicate that many purchase the vehicle in lieu of a more expensive luxury vehicle or, alternatively, as an additional household vehicle (as opposed to a primary vehicle).³⁶ In the first case, the proposed rebate would not likely be a strong incentive for wealthier individuals to buy clean cars; in the second, the rebate is unlikely to reduce emissions as much as efficiency improvements targeted toward drivers who rely on older vehicles and put more miles on them.

The market for hybrids and other fuel-efficient vehicles is already booming because of high gas prices. The popularity of light-duty trucks and sport utility vehicles has waned, and average new vehicle fuel economy improved in 2005 and 2006 as a result.³⁷ Nationwide, hybrid vehicle registrations increased 38 percent in 2007. More than one-fifth of the national hybrid vehicle market is in the Los Angeles, San Francisco, and Sacramento metro areas alone—with Los Angeles leading the nation in hybrid vehicle sales by a large margin.³⁸

Drivers of hybrid vehicles have also already received a bounty of other taxpayer-funded perks, including state and federal tax deductions, free parking in cities like Los Angeles and San Jose, and HOV carpool lane privileges.

In fact, since the Legislative Analyst's Office has concluded that, "consistent with the experience with other vehicle rebate programs in California, retailers may adjust the sales price upwards to account for the individuals and/or businesses being eligible for a rebate," Proposition 10 may simply make hybrid and alternative fuel vehicles farther out of reach to the average Californian than they already are.³⁹ Instead of getting higher-emission, older-model vehicles off the streets (the most cost-effective way to reduce vehicle-related air pollution and greenhouse gas emissions), a fortunate few new car buyers will pay a little bit less for the same cars they were already going to buy.

Part 5

Alternatives to the Energy Propositions

Proposition 7 and Proposition 10 attempt to lock in long-term funding for a few select technologies favored by the propositions' sponsors. An energy policy that asks legislators in Sacramento, or voters at polling stations, to guess what technologies will deliver the best environmental performance in 2050 is not sustainable. Reaching our full capacity for innovation requires that California's greenhouse gas abatement strategy put a premium on household and industry flexibility in complying with emission targets.

Such strategy would also implicitly recognize that “a ton is a ton”—that is, it doesn't matter whether emission reductions come from the energy sector or the transportation sector; what is important is that there is freedom to direct resources to the most cost-effective solutions when and where they occur. This requires consideration of two very important measures of cost-effectiveness. First, priority should be given to abatement measures based on the initial and lifetime costs of each measure in terms of dollars per metric ton of CO₂-equivalent reduced. Second, overall cost-of-living impacts are critical. Migration of residents and industries out of California to areas with lower costs is counter-productive to overall greenhouse gas reduction efforts.

A. Markets, not Mandates

Some Californians can afford to invest in the latest greenhouse-gas-cutting technologies and services. For example, utilities and other companies sell carbon credits to people who voluntarily opt to offset greenhouse gas emissions from the products they use. In the first six months of Pacific Gas and Electric's ClimateSmart Program, 16,000 customers voluntarily paid more than \$860,000 extra on their utility bills to support forest carbon sequestration in California.⁴⁰

However, voluntary greenhouse gas abatement at the other end of the spectrum is at least as important—for example, how quickly the least affluent Californians are able to afford new vehicle technologies. Los Angeles has made dramatic improvements in air quality since 1980 because, even as the basin's population grew by 42 percent and total automobile mileage grew by 88 percent

over the last 25 years, this growth has been offset by per-mile emissions reductions as a result of an ever-more technologically advanced vehicle fleet.⁴¹ Greater emission reductions are achieved through the purchasing power of lower-income drivers, as they retire their older vehicles, than by the vehicle purchases of wealthy drivers. All else being equal, lower taxes and well-designed vehicle buyback or scrap programs targeted at high-emitting vehicles are more effective than higher taxes and either mandates or rebates for expensive, new, high-fuel-efficiency vehicles.⁴²

Legislation for retiring high-emission vehicles that will do a better job than the proposed measures has already been approved and funded. Assembly Bill 118, signed into law in October 2007 by Governor Schwarzenegger, created the Alternative and Renewable Fuel and Vehicle Technology Program and the Enhanced Fleet Modernization Program.⁴³ The state's Goods Movement Emission Reduction Program, funded by voter approval of Proposition 1B two years ago, already provides up to \$50,000 per vehicle subsidies to replace high-emission commercial trucks—but unlike Proposition 10, the program prioritizes these handouts based on actual expected emission reductions and keeps the cleaner vehicles in-state.⁴⁴ The state already makes funds available for solar energy research and installation as well, through the New Solar Homes Partnership and Public Interest Energy Research (PIER) programs, for example.

The state should assess the performance of these incentive programs, and the existing RPS and the long-term 33 percent RPS goal supported by the governor, legislature and energy agencies before approving additional mandates and bond funds.

Largely in response to high gas prices, Californians reduced their gasoline consumption by more than 210 million gallons in the first half of 2008, as compared to the same period the year before.⁴⁵ Nationwide, growth in vehicle miles traveled among passenger vehicles, at 2.7 percent annually for the period from 1990 to 2004, dropped to an average annual growth rate of 0.8 percent from 2004 to 2006.⁴⁶ California has seen an even steeper decline in gasoline consumption than the nation as a whole, and Californians have driven fewer highway miles every month this year than the same months in the previous two years.⁴⁷

B. User- and Polluter-Pay Principles

The decline in gasoline consumption and vehicle miles traveled shows that markets work. Drivers respond to rising gas prices by adjusting their driving habits and car purchases. Pay-as-you-go car insurance plans, which will be available in California as early as next year, will further incentivize drivers with opportunities to decrease their mileage.⁴⁸ In the near future, utility consumers across the state will have better information and choices about their energy consumption at home as well. The state's major investor-owned utilities are in the process of installing "smart meters" that will allow retail customers to adjust their energy use based on hourly electricity prices and daily natural gas prices—providing point-of-sale price information in this \$100 billion industry for the first time in history.⁴⁹

Important investments in transportation and energy infrastructure will be required in order to both address the needs of a growing population and make progress toward California's greenhouse gas abatement goals. To the greatest extent possible, those improvements should be paid for by the people that use the new infrastructure. The two propositions under discussion here each get this principle wrong in a different way. Proposition 7 would require unprecedented infrastructure build out, but doesn't include a funding plan. Proposition 10, on the other hand, would require additional long-term bond debt to be paid off by taxpayers at large, for the short-term benefit of a small number of grantees.

C. Bringing Down Barriers to Energy Efficiency

In one statement to media, the campaign spokesman for Proposition 7 argued, "It's OK to pat yourself on the back for buying a twisty bulb or hybrid car, but wouldn't it be better to go out and vote for something that's going to reduce tons of emissions?"⁵⁰ California's hybrid vehicle drivers would be doing a great injustice to the vast majority of their fellow Californians who can't yet afford a hybrid vehicle if they followed this advice. Hybrid cars, along with solar photovoltaic and solar thermal electricity generation, rank among the least cost-effective greenhouse gas abatement measures available. The emphasis placed on these types of technologies by Propositions 7 and 10 is especially perverse when you consider that even some of the simplest, smartest ways to reduce energy consumption are out of reach to many Californians.

There are many widely available measures that actually save money while reducing greenhouse gas emissions, such as improvements to vehicle engines and transmissions, aerodynamics, weight, and on-road efficiency aides as simple as indicator lights; building efficiency measures including double-paned windows and thermal insulation; and electricity conservation through purchase of more efficient appliances. Two recent studies found greenhouse gas abatement measures nationwide that actually save money that could reduce emissions totaling roughly 1500 million metric tons annually by 2030.⁵¹ The studies found abatement measures under \$30 to \$50 per ton sufficient to bring national greenhouse gas emissions down to 1990 levels by 2030.

In contrast, the greenhouse gas benefits of hybrid electric vehicles cost \$68 to \$140 per ton.⁵² The greenhouse gas benefits of solar thermal and solar photovoltaic electrical generation as compared to an average new power plant in the United States are \$81 and \$125 per ton in mid-range estimates, respectively.⁵³ While there may be individual circumstances which make these technologies appealing and even cost-effective on a case-by-case basis, they would be a disastrous basis for any broad greenhouse gas abatement program. Lowering institutional barriers to the cost-effective conservation measures that already exist should be the first priority of greenhouse gas abatement policy.

Endnotes

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- ¹ See Governor Schwarzenegger's Executive Orders S-3-05 and S-01-07, and AB 32, the Global Warming Solutions Act of 2006.
 - ² Ballotpedia.org, *List of Proposition 7 Opponents*, ballotpedia.org/wiki/index.php/List_of_Proposition_7_opponents, September 7, 2008; and Cassandra Sweet, "Drive For Natural Gas Vehicles Faces Big Test In California," *Dow Jones Newswires*, August 24, 2008.
 - ³ Actually, California's eligible "renewable" energy sources include sources such as geothermal, biomass, and waste products that are not derived from inexhaustible natural processes. These sources are "renewable" only in comparison to fossil fuels. Large hydroelectrical projects and nuclear energy are also "renewable" in that sense, but nevertheless are not eligible sources under California's RPS.
 - ⁴ Proposition 7 text, proposed changes to PUC Code, Section 399.15(c)5.
 - ⁵ California Legislative Analyst's Office, *Proposition 7: Renewable Energy. Statute*. (Sacramento, July 17, 2008).
 - ⁶ Ibid.
 - ⁷ California Legislative Analyst's Office, *Bonds: Alternative Fuel Vehicles and Renewable Energy. Statute*, (Sacramento, July 17, 2008).
 - ⁸ California Energy Commission, *Greenhouse Gas Emissions Inventory*, www.climatechange.ca.gov/inventory/index.html, July 31, 2008.
 - ⁹ California Energy Commission, *2007 Integrated Energy Policy Report*, (Sacramento, 2007) p. 2.
 - ¹⁰ United States Energy Information Administration, "Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State," *Electric Power Monthly*, www.eia.doe.gov/cneaf/electricity/epm/table5_6_a.html, August 25, 2008.
 - ¹¹ California Public Utilities Commission, *Renewables Portfolio Standard Quarterly Report* (San Francisco, July 2008).
 - ¹² Margot Roosevelt, "Measure on energy draws fire," *Los Angeles Times*, April 08, 2008.
 - ¹³ California Public Utilities Commission, *Renewables Portfolio Standard Quarterly Report*.
 - ¹⁴ Ibid., p. 8.
 - ¹⁵ California Legislative Analyst's Office, *Proposition 7: Renewable Energy. Statute*.
 - ¹⁶ Gretchen Dumas, Memorandum to the Commission, docs.cpuc.ca.gov/PUBLISHED/REPORT/88422.htm, September 11, 2008, p. 8

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- ¹⁷ Ibid., pp. 2, 6.
- ¹⁸ California Public Utilities Commission, *RPS Project Status Table 3rd Quarter 2008*, cpuc.ca.gov/NR/rdonlyres/74A7B98C-3147-4102-80F3-765F078628A2/0/RPS_Project_Status_Table_3rd_Quarter_2008.xls, September 2008.
- ¹⁹ It even exceeds Sen. Obama’s suggested national Renewables Portfolio Standard of 10 percent by 2012, 25 percent by 2025 (my.barackobama.com/page/content/newenergy).
- ²⁰ California Public Utilities Commission, *Renewables Portfolio Standard Quarterly Report*, p. 10.
- ²¹ The Center for Resource Solutions Team, report for the California Public Utilities Commission, *Achieving a 33% Renewable Energy Target* (San Francisco, November 1, 2005), p. 44.
- ²² California Energy Commission, *2007 Integrated Energy Policy Report*, p. 105.
- ²³ California Public Utilities Commission, *RPS Procurement Status Report* (San Francisco, July 2008), p. 9.
- ²⁴ California Legislative Analyst’s Office, *Proposition 7: Renewable Energy. Statute*.
- ²⁵ California Energy Commission, Electricity Analysis Office, *Levelized and Comparative Cost of Electricity Production by Technology*, www.energyalmanac.ca.gov/electricity/levelized_costs.html, September 2008.
- ²⁶ California Energy Commission, *2007 Integrated Energy Policy Report*, p. 122.
- ²⁷ California Legislative Analyst’s Office, *Proposition 7: Renewable Energy. Statute*.
- ²⁸ See for example the sources in note 51, and *Cost Effective GHG Mitigation Measures for California*, Center for Clean Air Policy, 2006, http://www.ccap.org/docs/resources/96/Summary_Report_1-19-06_.pdf
- ²⁹ California Legislative Analyst’s Office, *An Overview of State Bond Debt*, www.lao.ca.gov/ballot/2008/bond_11_2008.aspx, August 29, 2008.
- ³⁰ Proposition 10 text, p. 6. It must be assumed that the provision “for highway use” refers to the exclusion of rebates to vehicles “authorized to be operated on all roads and highways in California.”
- ³¹ United States Department of Energy Office of Energy Efficiency and Renewable Energy and United States Environmental Protection Agency, *2008 Fuel Economy Guide*, www.fueleconomy.gov, May 16, 2008.
- ³² The proposition defines “clean alternative fuel” as any fuel that achieves at least a 10 percent reduction in carbon emissions when compared to conventional petroleum-based fuels. In the next five years, natural gas would predominantly if not exclusively meet this definition. The state’s Low Carbon Fuel Standard, currently under development, aims to reduce fuel carbon emissions by 10 percent by 2020—a significantly longer time horizon.
- ³³ *Energy Business Review*, “Clean Energy awarded grant to set up nine CNG filling stations in California,” July 18, 2008.
- ³⁴ United States Department of Energy Office of Energy Efficiency and Renewable Energy and United States Environmental Protection Agency, *2008 Fuel Economy Guide*.

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- ³⁵ J.D. Power and Associates, *While Many New-Vehicle Buyers Express Concern for the Environment, Few are Willing to Pay More for An Environmentally Friendly Vehicle*, www.jdpower.com/corporate/news/releases/pressrelease.aspx?ID=2008029, March 6, 2008.
- ³⁶ Topline Strategy Group, *Why People Really Drive Hybrids*, www.toplinestrategy.com/Topline_Strategy_Report_Why_People_Really_Buy_Hybrids.pdf, April 2007, found in a 2007 survey of Toyota Prius owners: 40 percent were upper-middle class consumers (with a median income between \$100,000 and \$150,000 per year) who would have purchased a more expensive luxury vehicle if the Prius was not available; 12 percent purchased a Prius to drive solo in carpool lanes; and 50 percent overall had a household income more than \$150,000. Note: sample size was limited to 118 drivers, but the results have been corroborated in other surveys, e.g. Scarborough Research, *Hybrid Vehicle Owners are Wealthy, Active, Educated and Overwhelmingly Democratic, According to Scarborough Research*, www.scarborough.com/press_releases/Hybrid%20FINAL%2012.4.07.pdf, December 4, 2007, found that 42 percent of U.S. households that owned or leased a hybrid had average incomes of \$100,000, twice the national average. Finally, surveys of driving habits of actual Prius drivers, at least initially, showed that on average they drove far fewer annual miles than the national average of all drivers as a whole; see for example, CNW Marketing Research, *Dust to Dust*, cnwmr.com/nss-folder/automotiveenergy/, June 19, 2008.
- ³⁷ United States Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990–2006* (Washington, D.C., April 15, 2008), p. 2-22.
- ³⁸ R. L. Polk & Co., *Analysis Shows Hybrid Registrations Continue To Rise*, usa.polk.com/News/LatestNews/news_2008_0421_hybrids.htm, April 21, 2008.
- ³⁹ California Legislative Analyst’s Office, *Bonds: Alternative Fuel Vehicles and Renewable Energy. Statute*.
- ⁴⁰ Pacific Gas and Electric, *2007 Customer Annual Report*, pge.com/myhome/environment/whatyoucando/climatesmart/climatesmartnewsandinfo/ (March 2008).
- ⁴¹ Matthew E. Kahn and Joel Schwartz, “Urban air pollution progress despite sprawl: The ‘greening’ of the vehicle fleet,” *Journal of Urban Economics*, vol. 63, no. 3 (May 2008), pp. 775-787.
- ⁴² See, for example, Todd BenDor and Andrew Ford, “Simulating a combination of feebates and scrappage incentives to reduce automobile emissions,” *Energy*, vol. 31, no. 8-9, (July 2006), pp. 1197-1214.
- ⁴³ The Enhanced Fleet Modernization Program takes into account the emission benefits of the vehicle’s retirement, the emissions impact of any replacement vehicle, and the location of vehicles in areas of the state with the poorest air quality in prioritizing funds for vehicle retirement. Retiring vehicles based on emission of criteria air pollutants should have roughly parallel benefits in reduction of greenhouse gas emissions. Proposition 10 specifies that bond monies authorized under the measure would not supplant funds approved for the Enhanced Fleet Modernization Program or the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007—H&S Code § 44125 and 44270.
- ⁴⁴ California Environmental Protection Agency, Air Resources Board, *Proposition 1B: Goods Movement Emission Reduction Program: Final Guidelines for Implementation*, February 28, 2008.

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- ⁴⁵ California Board of Equalization, *Net Taxable Gasoline Gallons, 2000–Present*, www.boe.ca.gov/sptaxprog/reports/MVF_10_Year_Report.pdf, August 28, 2008.
- ⁴⁶ United States Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, p. 2-22.
- ⁴⁷ California Department of Transportation, Division of Transportation Systems Information, *California Highway Travel*, traffic-counts.dot.ca.gov/monthly/2008/07/charts.pdf, July 2008.
- ⁴⁸ See Marc Lifsher, “California insurance commissioner backs pay-as-you-drive policies,” *Los Angeles Times*, August 28, 2008.
- ⁴⁹ Sempra Energy plans to replace an estimated 1.4 million electric meters with smart meters by 2011; Southern California Edison will complete replacement of 5.3 million conventional meters by 2012; all 10.3 million meters in the Pacific Gas and Electric service area will be replaced by 2011. See Reason Foundation, “The future is here: smart metering in CA,” *Out of Control*, May 22, 2008. Los Angeles Department of Water and Power has smart metering available to commercial and industrial customers.
- ⁵⁰ John Motsinger, “California ballot: Betting on Big Solar,” *Sacramento News & Review*, July 3, 2008.
- ⁵¹ Jon Creyts et al., *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?*, U.S. Greenhouse Gas Abatement Mapping Initiative Executive Report (New York: McKinsey & Company, December 2007), p. xiii; and Nicholas Lutsey, *Prioritizing Climate Change Mitigation Alternatives: Comparing Transportation Technologies to Options in Other Sectors*, (Davis, CA: University of California, Davis, Institute of Transportation Studies: June 2008), p. 150. Some of the reasons for these unrealized potential cost- and greenhouse-gas-savings include poor knowledge on behalf of consumers, initial cost hurdles, and a mismatch of ownership incentives.
- ⁵² Nicholas Lutsey, *Prioritizing Climate Change Mitigation Alternatives*, p. 63; Jon Creyts et al., *Reducing U.S. Greenhouse Gas Emissions*, p. 45.
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