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EXECUTIVE SUMMARY

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Arnold Schwarzenegger, *Governor*

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This report was prepared as part of the Integrated Energy Policy Report Proceeding, Docket 04-IEP-1. The report will be considered for adoption by the full Energy Commission at its Business Meeting on November 21, 2005. The views and recommendations contained in this document are not official policy of the Energy Commission until the report is adopted

EXECUTIVE SUMMARY

California is the sixth largest economy in the world. To meet the needs of its growing population, California's economy depends upon affordable, reliable, and environmentally sound supplies of electricity, natural gas, and transportation fuels. The challenge for California's policy makers is to manage an energy sector that is increasingly dependent on oil and natural gas and may face spiraling energy prices, potential supply shortages, and an inadequate and aging energy delivery infrastructure.

Energy prices in California are higher than ever before. Gasoline prices reached record levels in September, consuming valuable dollars that could otherwise have been spent on goods and services to help bolster the state's recovering economy. With world oil prices topping $70 per barrel, it is unlikely that gasoline consumers will see any meaningful relief in the near future. Electricity rates, although not as erratic as they were during the state's 2000-2001 energy crisis, are still among the highest in the nation, forcing businesses to struggle to maintain profit margins as the cost of doing business in the state rises. California depends upon natural gas to generate about half of its electricity, so natural gas prices that have more than doubled since 2000 are likely to keep electricity rates high.

Energy demand in all sectors will continue to rise with California's rapidly growing population and strengthening business sector. Weather-adjusted electricity consumption in California increased an average of 2 percent over each of the last two years, and continues to rise. Meanwhile, state demand for transportation fuels has increased 48 percent over the last 20 years and continues to grow at an alarming rate despite record high gasoline and diesel prices. The state's dependence on natural gas to generate electricity is escalating along with the demand for natural gas in the residential and commercial sectors, with California's natural gas consumption second only to that of Texas.

Despite improvements in power plant licensing, enormously successful energy efficiency programs, and continued technological advances, development of new energy supplies is not keeping pace with the state's increasing demand. Construction of new power plants has lagged and the number of new plant permit applications has decreased. In addition, the development of new renewable resources has been slower than anticipated, due in part to the state's complex and cumbersome Renewable Portfolio Standard process. In the transportation sector, California's refineries cannot keep up with the mounting need for petroleum fuels and consequently depend upon increasing levels of

imports to meet the state's needs. California also imports 87 percent of its natural gas supplies, which are increasingly threatened by declining production in most U.S. supply basins and growing demand in neighboring states.

California's energy infrastructure may be unable to meet the state's energy delivery needs in the near future. The most critical infrastructure issue is the state's electricity transmission system, which has become progressively stressed in recent years. The systematic under-investment in transmission infrastructure is reducing system reliability and increasing operational costs. Last year, transmission congestion and related reliability services cost California consumers over $1 billion. The state also experienced price spikes and several local outages over the past summer. California's petroleum import and refinery infrastructure also faces challenges including the inherent conflict between the need to expand import, refining, and storage facilities to meet transportation fuel demands and the environmental and social concerns of local communities affected by these needed expansions. In the natural gas sector, California has made infrastructure improvements that will increase the reliability and operational flexibility of the natural gas system, but must still address the need for additional pipeline capacity to meet peak demand.

In the *2003 Energy Report* and the *2004 Energy Report Update*, the California Energy Commission recommended a broad range of strategies to reduce energy demand, secure additional energy supplies, move toward more sustainable technologies and fuel types, and build the necessary infrastructure to protect California from future supply disruptions and high prices. The *Energy Action Plan,* adopted earlier this year by the Energy Commission and the California Public Utilities Commission, sets out a series of concrete actions for the state to undertake to meet these challenges. The state must reinforce its commitment to these efforts and take immediate action to address problems in the energy sector to meet the state's policy goal of ensuring adequate, affordable, reliable, and environmentally-sound energy services for its citizens.

Ensuring Adequate Electricity Supplies

As the state's demand for electricity increases, California could face severe shortages in the next few years. Of particular concern are the potential impacts of higher-than-average summer temperatures, which can drastically increase the state's electricity demand, as well as shortages resulting from decreased hydroelectric generation in lower-than-average precipitation years. Either of these situations could cause

dangerously low reserve margins and potential supply disruptions, particularly in Southern California. Reserve margins could also be affected by the retirement of aging natural gas-fired power plants, which remain critical components of California's generation fleet despite strong policy directives to diversify the state's electricity supplies.

The *2005 Energy Report* assessment of electricity supply and demand concludes that maintaining adequate electricity reserves will be difficult over the next few years. The state has made some progress toward resource adequacy for investor-owned utilities by requiring them to maintain year-round 15-17 percent reserve margins. Jurisdictional authority over other load serving entities is less clear. Until recently there was no formal mechanism to ensure resource adequacy for publicly owned utilities, which provide up to 30 percent of the state's electricity. In September 2005 the Legislature passed and the Governor signed AB 380 (Nunez), Chapter 367, Statutes of 2005, which extends jurisdiction over independent load serving entities and requires publicly owned utilities to report their respective supply circumstances to the Energy Commission so that their resource adequacy progress can be accurately assessed in future *Energy Report* proceedings.

California must also address its long-term electricity needs by aggressively bringing new generation online. The lack of long-term power contracts has stalled development and construction of more than 7,000 megawatts (MW) of permitted plants and sharply curtailed the number of new permit applications Utilities need to invest now for the long-term to avoid a repeat of the catastrophic mistakes made during the 2000-2001 energy crisis that Californians are still paying for today. California's dependence on natural gas to generate electricity is also increasing as utilities continue to purchase generation from the state's aging fleet of natural gas-fired power plants under short-term contracts. These issues are being addressed in the California Public Utilities Commission's (CPUC) 2006 long-term procurement proceeding. Through that proceeding investor-owned utilities should be encouraged to sign long-term contracts that will cover both the annual "net short" and allow for the orderly retirement or repowering of the aging power plants identified in the *2004 Energy Report Update.*

The utility procurement process needs to be more open and transparent for all parties. The state's investor-owned utilities continue to claim that much of the data used in their resource planning and procurement are confidential. The Energy Commission, however, concludes that important benefits come from rigorous public scrutiny and debate about the data and planning assumptions the CPUC ultimately uses to develop its resource procurement decisions. The Energy Commission will participate

in the CPUC's rulemaking to revise regulations regarding disclosure of data, and has initiated its own rulemaking to review data regulations for the next *Energy Report* cycle.

The Energy Commission strongly supports the following procurement recommendations:

- The CPUC should require investor-owned utilities to procure enough energy and capacity through long-term contracts to meet their net short positions. Procurement plans should provide for the orderly retirement or repowering of aging plants by 2012.
- The CPUC should develop a set of "coming and going" rules for departing load by the end of 2006.
- The Energy Commission and the CPUC should establish open and transparent resource planning and procurement processes for all-source and renewable resources, and eliminate confidential procurement review groups.
- The CPUC and the Energy Commission should develop a more transparent and standardized method for addressing least-cost, best-fit criteria and consistently apply a renewable "rebuttable presumption" to all procurement.

An important alternative to building large new power plants is distributed generation, which is electricity produced on site or close to load centers that is also connected to a utility's distribution system. The most efficient and cost-effective form of distributed generation is cogeneration or combined heat and power. By recycling waste heat, these systems are much more efficient than systems that separately serve thermal and electric loads. They are also considerably more efficient than almost all conventional gas-fired power plants. California has more than 9,000 MW of combined heat and power systems throughout the state, representing approximately 17 percent of statewide generation. Most of these systems are larger than 5 MW, suggesting that the state should focus its efforts on large-scale projects that could provide more than 5,000 MW of additional generating capacity over the next 15 years.

Current state policy must change for California to tap into this potential generation source and retain the existing pool of combined heat and power facilities so critical to reliable operation of the state grid. Developers of new combined heat and power facilities are struggling to find customers to purchase their excess power at the wholesale level, and the state's suspension of direct access hampers their ability to sell their excess power at the retail level. For existing facilities, the unwillingness of utilities to renew existing qualifying facility contracts has led some operators to remove their combined heat and power systems entirely and rely instead on less efficient boilers to meet their heating needs. There

will be serious adverse consequences for electric reliability, natural gas demand, and air quality if this trend is allowed to continue.

The Energy Commission strongly supports the following combined heat and power recommendations:

- The CPUC and the Energy Commission should establish annual utility procurement targets for CHP facilities by the end of 2006.
- The CPUC should require investor-owned utilities to purchase electricity from CHP facilities at prevailing wholesale prices.
- The CPUC should explore regulatory incentives that reward utilities for promoting customer and utility-owned combined heat and power projects.
- The CPUC should require that investor-owned utilities provide CA ISO scheduling services for these facilities and be compensated for doing so.

A significant percentage of California's electricity supply comes from the in-state Diablo Canyon and San Onofre nuclear power plants. Operators at these nuclear plants face many issues involving the transportation and disposal of spent fuel, upcoming extensions of their operating licenses, and major capital expenditures to replace aging steam generators. New nuclear power plant construction in California was suspended in 1976 pending determination by the Energy Commission that a high-level federal nuclear waste disposal repository has been approved and built. The Energy Commission reaffirms its 1978 finding that a high-level nuclear waste repository has been neither approved nor built. Californians have contributed well over $1 billion to the federal waste disposal development effort, which remains plagued with licensing delays, increasing costs, technical challenges, public opposition, and managerial problems.

The Energy Commission strongly supports the following nuclear recommendations:

- The federal government should return some portion of the funds paid by California ratepayers for a permanent national repository for nuclear waste in order to pay for interim storage of waste at California reactor sites.
- The Legislature should develop a suitable state framework to review the costs and benefits of nuclear power plant license extensions.

Reducing Energy Demand through Efficiency and Alternative Resources

Reducing the demand for energy is the most effective way to reduce energy costs and bolster California's economy. Reducing demand also reduces the likelihood of supply shortages that can cause costly price spikes and affect reliability. California will continue to depend upon petroleum fuels and natural gas to meet its energy needs for the foreseeable future. The state needs to act now to implement energy efficiency measures for petroleum fuels and increase its use of alternatives to reduce its reliance upon these increasingly volatile fuel supplies. Efficiency and renewable resources are top priorities in California's electricity loading order policy, and the state needs to extend these priorities to California's transportation sector by reducing demand for petroleum fuels through efficiency and alternative fuel use.

Electricity

California continues to be the national leader in efficiency. While energy use per person in the rest of the nation has increased by 45 percent over the last 30 years, California's per capita use has remained relatively flat as a result of the state's energy efficiency measures. In the *2003 Energy Report*, the Energy Commission concluded that California could save an additional 30,000 gigawatt hours (GWh) of energy from energy efficiency programs over the coming decade. In 2004, the CPUC established aggressive energy savings goals and authorized a significant increase in energy efficiency funding. Meeting these goals will reduce the utilities' need for additional electricity supplies between 2004 and 2013 by more than half. The recent passage of SB 1037 (Kehoe) Chapter 366, Statutes of 2005, further reinforces the state's energy efficiency policies by requiring all utilities to meet their unmet resource needs first with energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible.

The state's efficiency programs need to focus on peak savings as well as energy savings. Because California's electricity demand is driven by short summer peaks, reducing peak demand is essential for improving electricity reliability, reducing price volatility, and delaying the need for expensive power plants that operate only a few hours a year. The Energy Commission recommends renewed emphasis on energy efficiency programs that provide peak demand savings.

California's water infrastructure accounts for nearly 20 percent of the state's electricity consumption. If not coordinated and properly managed on a statewide basis, water-related electricity demand could ultimately

affect the reliability of the electric system during peak load periods when reserve margins are low. Water and wastewater agencies would similarly be unable to meet the needs of their customers without adequate electricity supplies. More efficient water usage, coupled with energy efficiency improvements in the water infrastructure itself, could reduce electricity demand in this sector. The Energy Commission, the Department of Water Resources, the CPUC, local water agencies, and other stakeholders should explore and pursue cost-effective water efficiency opportunities that would save energy and decrease the energy intensity in the water sector.

Demand response programs are the most promising and cost-effective options for reducing peak demand on California's electricity system. The CPUC is currently considering proposals from the investor-owned utilities to purchase and install advanced meters for all their customers. New metering technology is the primary platform for future voluntary and mandatory demand response policies. Although the CPUC adopted demand reduction targets for investor-owned utilities in 2003, demand response programs have failed to deliver their savings targets for each of the last three years and appear unlikely to meet their targets for next year. Given the huge cost of serving California's peak loads, the state's policy makers must redouble their efforts to implement ambitious demand response programs, through tariffs and control technology, and install advanced meters for all customers as soon as practically possible. ***The Energy Commission strongly supports the following energy efficiency and demand response recommendations:***

- The CPUC and Energy Commission should closely monitor investor-owned utilities' energy efficiency programs to ensure that peak energy savings are captured in their respective efficiency portfolios.
- The CPUC, Department of Water Resources, the Energy Commission, local water agencies and other stakeholders should assess efficiency improvements in hot and cold water use in homes and businesses, and include these improvements in 2006-2008 programs.
- The Energy Commission should establish, consistent with SB 1037, reporting requirements for publicly owned utilities to ensure that their energy efficiency goals are comparable to those required of investor-owned utilities.
- The CPUC and the Energy Commission must vigorously pursue actions to ensure that the state's demand response goals are met.

California is also a national leader in the development of renewable resources. Over the past 30 years, California has built one of the largest and most diverse renewable generation portfolios in the world. In 2002, California established its Renewable Portfolio Standard program, with the

goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The *2003 Energy Report* recommended accelerating that goal to 2010, and the *2004 Energy Report Update* further recommended increasing the target to 33 percent by 2020. The *Energy Action Plan* supported this goal. The current process for procuring renewable resources is overly complex and cumbersome, and, without improvement, could impede the state's ability to achieve its renewable goals.

The CPUC and the Energy Commission should work together to simplify, streamline, and expedite the state's Renewable Portfolio Standard process. The two agencies should also work together to establish simple rules for the Renewable Portfolio Standard program for both energy service providers and community choice aggregators. These rules should allow limited trading of renewable energy certificates, which would increase participation by these entities and help address the current transmission constraints that preclude access to promising renewable resource areas in the state. As the Western Renewable Energy Generation Information System begins operation, this compliance mechanism should be expanded to include the entire Western Electricity Coordinating Council.

There are several additional issues facing wind resource development in California. The state needs to focus on repowering aging wind facilities to increase the amount of renewable generation from these prime sites and reduce the number of bird deaths caused by wind turbines. The state also needs to conduct additional research and development at both the Energy Commission and the California Independent System Operator (CA ISO) to address current barriers to integrating intermittent wind resources into the state's transmission system.

California also has promising opportunities to increase energy production from renewable resources connected with the state's water system. In-conduit hydropower — turbines installed within conduits to generate electricity from flowing water in pipelines, canals and aqueducts — is an attractive possibility because it is relatively easy to permit and has fewer environmental impacts than large hydroelectric power plants. Anaerobic digesters installed at or near wastewater treatment facilities, dairies, or food processing facilities can also produce biogas, which can be used to either power on-site generation or be sold to the grid.

Many existing in-conduit facilities are facing the expiration of their standard offer power purchase contracts with the state's investor-owned utilities. Existing rules do not allow water or wastewater utilities to credit the electricity they generate to their energy bills. Therefore, if this

electricity cannot be directly connected to an existing load, it must be sold into the wholesale bulk power market. The cost and complexity of selling into the wholesale bulk power and transmission markets are daunting, even for large generators, and can be prohibitive for very small generators. The Energy Commission recommends expediting and reducing the cost of utility interconnection, eliminating economic penalties including standby charges, removing size limitations for net metering, and allowing water and wastewater utilities to self-generate and wheel power within their own systems.

The Energy Commission strongly supports the following renewable energy recommendations:

- The Energy Commission should ensure that publicly owned utilities meet the same Renewable Portfolio Standards targets for eligibility and compliance required of investor-owned utilities.
- The CPUC and the Energy Commission should establish a joint proceeding to develop a simpler and more transparent Renewable Portfolio Standard process by the end of 2006.
- The CPUC and Energy Commission should closely monitor the 2005 renewable procurement cycle to determine the potential value of greater contract standardization.
- The CPUC should require investor-owned utilities to procure a prudent contract-risk margin, starting at 30 percent, to prevent under-procurement.
- The CPUC should quickly develop new standardized contracts for wind repowering projects to more efficiently harness wind resources and reduce bird deaths.

Transportation

The *2003 Energy Report* concluded that by far the most cost-effective strategy to reduce petroleum demand in the transportation sector is to increase vehicle fuel economy. The Energy Commission recommended that the state take steps to influence the federal government to double the combined fuel economy standards for cars and light trucks. Governor Schwarzenegger has called on the federal government to do exactly that. Unfortunately, efforts to spur the federal government to significantly increase the Corporate Average Fuel Economy standards for passenger cars and light trucks have not been successful. The federal government has proposed only a very minor increase in the light-truck standard and completely ignored potentially far-reaching savings in the passenger car market. California needs to intensify its efforts to forge a coalition with other states and stakeholders to persuade the federal government to double the Corporate Average Fuel Economy standards.

The state can pursue other strategies to increase transportation efficiency, including increasing the number of hybrid-electric, plug-in-hybrid electric, light-duty diesel vehicles in California, more effective marketing of low-rolling resistance tires, implementing anti-idling regulations for trucks and truck stop electrification, and integrating transportation and land-use planning.

Increased efficiency in new cars and light trucks alone cannot maintain the state's overall petroleum reduction goals. California must also vigorously support the rapid development and availability of alternative fuels so that their air quality and petroleum replacement benefits can be realized. The *2003 Energy Report* recommended a goal to increase the use of non-petroleum fuels to 20 percent of on-road demand by 2020 and to 30 percent by 2030. The Energy Commission continues to strongly support these goals, though meeting them will take considerable and concentrated effort given the current low penetration level of only 6 percent.

In his response to the Commission's previous Energy Reports, the Governor made clear that the state needs to promote the efficient use of petroleum products and promote reductions in the demand for petroleum. As directed by the Governor, the Energy Commission has assumed the lead in developing a long-term transportation plan by March 31, 2006, that will reduce gasoline and diesel use and increase alternative fuel use. This effort will be a prelude to a larger alternative fuel plan for the state required by AB 1007 (Pavley), Chapter 371, Statutes of 2005, that is due by June 30, 2007. The Energy Commission envisions that the alternative transportation fuel plan must bridge the gap between today's technologies and the transition to hydrogen fuels and vehicles called for in the Governor's Hydrogen Highway Network Blueprint Plan. California must pursue a diverse portfolio of fuels and advanced transportation technologies that address both current supply and demand problems and build a sustainable foundation for the future.

The Energy Commission strongly supports the following transportation recommendations:

- The state should simultaneously reduce petroleum fuel use, increase fuel diversity and security, and reduce emissions of air pollution and greenhouse gases.
- The state should implement a public goods charge to establish a secure, long-term source of funding for a comprehensive transportation program including broad-based funding for infrastructure, technology and fuels research, analytical support, and incentive programs.

- The state should continue to work closely with other states to pressure the federal government to double vehicle fuel efficiency standards and enact fleet procurement requirements that include super-efficient gasoline and diesel vehicles.
- The state should establish a non-petroleum diesel fuel standard so that all diesel fuel sold in California contains a minimum of 5 percent non-petroleum content that would include biodiesel, ethanol, and/or gas-to-liquid components.
- The state should establish a state renewable gasoline fuel standard so that the pool of all gasoline sold in California contains, on average, a minimum of 10 percent renewable content.
- The state should investigate how investor-owned utilities can help develop the equipment and infrastructure to fuel electric and natural gas vehicles.
- The state should, for its fleet of vehicles, establish a minimum fuel economy standard and a procurement requirement for alternative fuels and vehicles, and examine the merits of using re-refined and synthetic oils.

Natural Gas

The *2003 Energy Report* recommended that the state reduce natural gas demand by increasing funding for natural gas efficiency programs. California has made progress in this area. In 2004, the CPUC increased 2005 funding for natural gas efficiency programs by $19.8 million and set aggressive goals intended to double annual gas savings by 2008 and triple them by 2013. The recently enacted SB 1037 also requires gas utilities to first meet their unmet resource needs with all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible. The Energy Commission and the CPUC should rigorously evaluate, measure, and monitor these gas efficiency programs to ensure that they produce their intended savings and that public funds are being well spent.

Another way to increase natural gas efficiency is to increase the role of combined heat and power facilities as a way to meet California's rising electricity supply needs.

Natural gas efficiency is a priority in the Energy Commission's natural gas research, development and demonstration program. Approximately $1.3 million of the $12 million in available 2005 funding has been preliminarily earmarked for efficiency research. The Energy Commission should continue its efforts to incorporate the results of this critical research into the state's natural gas efficiency programs.

Improving the Energy Infrastructure

Electricity Transmission Infrastructure

In both the *2003 Energy Report* and the *2004 Energy Report Update*, the Energy Commission identified existing problems with the state's transmission system and recommended improvements to the transmission planning and permitting processes that would speed up approvals of new transmission lines and upgrades to existing lines. However, the state still lacks a well-integrated transmission planning and permitting process that considers both generation and transmission needs, evaluates non-wires alternatives, plans for transmission corridors well in advance of need, and allows access to essential renewable resource areas in the state.

California policy makers must move aggressively to create a planning and permitting process that leverages the core responsibilities and strengths of the utilities, the Energy Commission, the CA ISO, and the CPUC. The Energy Commission reemphasizes its recommendation in the *2003 Energy Report* that the Legislature transfer the siting functions for transmission lines from the CPUC to the Energy Commission. In the absence of that authority, the Energy Commission will continue to work with other agencies to improve the transmission permitting process.

California still lacks a formal process to effectively plan for transmission corridors well in advance of their need. The Energy Commission recommends a corridor planning process that would identify the corridor needs of transmission owners; establish corridor priorities; identify major permitting, environmental and land-use issues; and ensure full participation of all affected local, state and federal agencies and stakeholders. Further, the Legislature should authorize the Energy Commission to designate corridors so that utilities have a level of financial certainty that allows them to acquire land and easements, while also allowing the Energy Commission to proceed with the comprehensive environmental reviews that could significantly shorten overall planning and permitting lead times. The CPUC should also extend its current five-year limitation on investor-owned utility land banking for the cost of future transmission corridors within their rate bases.

California must urgently encourage major investments in the new transmission infrastructure needed to access remotely located renewable resources in the Tehachapi and Imperial Valley areas. Without this investment it will be difficult for California to meet its statewide Renewable Portfolio Standard goals. In March 2005, Southern California Edison (SCE) proposed to the Federal Energy Regulatory Commission (FERC) a new category of transmission facility, called a "renewable-

resource trunk line," that would allow the interconnection of large concentrations of renewable generation resources located within a reasonable distance of the existing grid under operational control of the CA ISO. However, in July 2005, FERC denied SCE's request, thereby eliminating a valuable regulatory instrument that could have overcome renewable transmission constraints. This denial clearly underscores the need to examine all regulatory options, including changes to the CA ISO tariff so that this new category of transmission project can be recognized by FERC. This recommendation was also made in the *2004 Energy Report Update*.

The Energy Commission strongly supports the following transmission recommendations:

- The Legislature should expeditiously transfer transmission permitting responsibilities from the CPUC to the Energy Commission, using the successful framework laid out in the Warren-Alquist Act for generation siting.
- The Energy Commission, the CPUC, and the CA ISO should collaborate to change the CA ISO tariff to encourage construction of transmission for renewable generation interconnections, as well as explore other regulatory mechanisms.
- The Legislature should assign the Energy Commission the statutory authority to establish a statewide corridor planning process and designate corridors for future use.
- The Energy Commission should actively participate in the federal corridor planning processes recently enacted as part of the federal Energy Act of 2005.

Petroleum Infrastructure

California urgently needs to expand its petroleum infrastructure. Despite recent and planned improvements, California still needs to expand its marine terminal capacity, marine storage, and the pipelines that connect marine facilities and refineries with main product pipelines. Most of the required expansion is needed in the Los Angeles Basin, which faces a number of barriers including scarcity of land, pressure to remove a portion of existing facilities in favor of container cargo facilities, and new standards for marine terminals. In Northern California, timely dredging of the Suisun Bay Channel, the Pinole Shoals, and other areas near refineries is critical to the efficient operation of petroleum infrastructure.

The *2003 Energy Report* identified the continuing need for modifying and expanding the state's petroleum infrastructure facilities to meet the state's rising demand for petroleum fuels. A major barrier is the inefficient and often overlapping responsibilities of permitting

bureaucracies which frequently result in unacceptably lengthy lead times. There is a general consensus among stakeholders that the Energy Commission should work with representatives of the petroleum industry and permitting agencies to develop "best permitting practice" guidelines to streamline and coordinate the permitting process for new petroleum infrastructure. The Energy Commission believes these guidelines should include: the description of the agencies involved and their relationships in agency processes; critical path permitting timelines; information requirements; standardized permitting timelines; requirements for expedited permitting; mitigation requirements; concurrent and coordinated permit review; procedures for categorical exemptions and ministerial permits; and streamlined appeal processes.

The Energy Commission strongly supports the following petroleum infrastructure recommendation:

- The Energy Commission should develop petroleum infrastructure permitting guidelines based upon a "best practices" approach following this inter-agency evaluation.

Natural Gas Infrastructure

California imports 87 percent of its statewide natural gas supply, which is threatened by declining production in most U.S. supply basins. Though California has not experienced a widespread natural gas shortage in many years, colder-than-average weather, increased demand in other states, or natural disasters like Hurricane Katrina could quickly create demand spikes that would draw down stored gas supplies and adversely affect the state's ability to meet consumer natural gas demand. California needs to expand its analytical ability to determine the adequacy of its natural gas infrastructure and likelihood of potentially destructive peak demand spikes.

To prevent interruptions in the state's natural gas supplies, the *2003 Energy Report* recommended the state ensure that existing natural gas storage be used to provide adequate supplies and protect against price spikes. The state has made good progress in increasing its current storage inventory, and also has plans to develop additional storage capacity in 2006. A margin of excess capacity will provide consumers a choice of supplies and is part of a critical foundation needed to support a competitive market and stabilize short-term pricing variations.

California has also improved its natural gas infrastructure by increasing intrastate pipeline capacity and in-state storage. Pipeline expansions completed over the last four years have also helped ensure that the state can access conventional natural gas supply basins outside of the state.

The state must make certain that existing infrastructure is both maintained and retained. The state also needs to continue to evaluate the need for additional pipeline capacity to meet customer demand on the coldest days in winter or when there are interstate pipeline disruptions.

An important addition to natural gas infrastructure in North America is the planned construction of liquefied natural gas import terminals. These facilities will increase natural gas imports to the U.S. over the next 10 years and also help meet California's growing natural gas needs. Currently, no liquefied natural gas terminals are located on the West Coast. The *2003 Energy Report* endorsed the need to develop these facilities and their associated infrastructure to better serve the natural gas needs of the western U.S.

The cost of delivering natural gas to the West Coast through a liquefied natural gas project is expected to be well below the market prices that California currently pays at its borders, and could have a dramatic effect on gas market prices in the state. For example, if market prices dropped by 50 cents per million British thermal units, Californians would save more than $1 billion annually on their natural gas bills.

Several companies have recently proposed building liquefied natural gas import facilities in California and Mexico. In California, these include the Cabrillo Deepwater Port and the Clearwater Port, both of which are offshore projects, and the Long Beach LNG Import Project. In Mexico, there are three proposed facilities including the Terminal GNL Mar Adentrode Baja and the Moss Maritime LNG, both of which are off-shore projects, and the Sonora LNG facility. Construction has begun on a fourth project, Energia Costa Azul, expected to be online in 2007.

Global Climate Change

California must continue to be highly aware of the environmental impacts of its energy policies. As the world's 17th largest emitter of greenhouse gases, California must incorporate its efforts to reduce greenhouse gases into its energy policies. In June 2005, Governor Schwarzenegger established greenhouse gas emission targets intended to reduce greenhouse gas emissions by 2010 to 2000 emission levels, by 2020 to 1990 levels, and by 2050 to 80 percent below 1990 levels. The Governor's Climate Action Team, led by the California Environmental Protection Agency, is charged with developing the program that will achieve the Governor's targets. The first report of the Climate Action Team is due to the Governor and Legislature in January 2006.

The state is exploring a number of strategies to reduce greenhouse gas emissions. The CPUC now requires that investor-owned utilities use a

carbon dioxide adder of an initial $8 per ton in their long-term procurement plans, encouraging them to invest in lower-emitting resources. In addition, the CPUC unanimously adopted a resolution directing its staff to develop an investor-owned utility greenhouse gas performance standard "that is no higher than the greenhouse gas emission levels of a combined-cycle natural gas turbine" for all procurement contracts longer than three years. In the case of coal-fired generation, the capacity to capture and store carbon dioxide safely and inexpensively is essential for meeting these standards. The *Energy Action Plan* commits that the agencies will " Ensure that energy supplies serving California, from any source, are consistent with the Governor's climate change goals." The Energy Commission endorses the CPUC's setting a greenhouse gas performance standard for investor-owned utilities and agrees that an offset policy must await a formal greenhouse gas regulatory system and must include a reliable and enforceable system of tracking emission reductions. The Energy Commission looks forward to working with the CPUC to implement a greenhouse gas performance standard as part of the 2006 procurement proceeding.

While more specific recommendations must necessarily await the January 2006 report from Governor Schwarzenegger's Climate Action Team, the Energy Commission recommends the following:

- A greenhouse gas performance standard for utility procurement should be set no higher than emission levels from new combined-cycle natural gas turbines.
- Additional consideration is needed before determining what if any role greenhouse gas emission offsets could play in complying with such a standard.

Border Energy

The California – Baja California Norte border region extends about 60 miles north and south of the California-Mexico border. Rapid population, commercial, and industrial growth in the region is substantially increasing the demand for energy. The border region is becoming an "energy corridor" as states on both sides develop facilities not only to meet local needs, but also to export across state and international borders. This cross-border energy relationship is likely to become even more interdependent in the future with the growing need for new generation, transmission lines, and natural gas supply pipelines. The growing demand for energy in the border region also is adding to already significant air quality problems and fundamental differences in the regulatory approaches on both sides of the border is hindering resolution of these environmental concerns.

The Energy Commission strongly supports the following border energy recommendation:

- The Energy Commission believes the state should work to establish a cross-border, binational policy to coordinate energy planning and development and address environmental concerns in the border region.

Conclusions

The health of California's economy depends upon reliable, affordable, adequate, and environmentally-sound supplies of energy. The rising cost of energy hurts consumers who must spend a greater percentage of their income on energy, and businesses who see their profits shrink as their energy costs rise. California's dependence on natural gas and petroleum fuels also continues to increase, making the state vulnerable to supply disruptions and painful price spikes.

Implementation of the recommendations in the *2005 Energy Report* will increase California's energy supplies, reduce energy demand, broaden the range of alternatives to conventional energy sources, and improve the state's energy delivery infrastructure. Many of these recommendations were made earlier in both the *2003 Energy Report* and the *2004 Energy Report Update*. While the state has made progress in implementing many of the recommendations from past IEPRs, there is much more to be done. It is time for California to urgently address the many challenges facing the state's energy systems to safeguard its economy and its environment.