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| <b>Docket Number:</b>   | 17-BSTD-02  |
| <b>Project Title:</b>   | 2019 Title 24, Part 6, Building Energy Efficiency Standards Rulemaking      |
| <b>TN #:</b>            | 225059  |
| <b>Document Title:</b>  | Memo with Signed Form 399 for the 2019 Energy Code, Title 24, Parts 1 and 6 |
| <b>Description:</b>     | Includes cover sheet and explanatory memorandum.                            |
| <b>Filer:</b>           | Adrian Ownby  |
| <b>Organization:</b>    | California Energy Commission  |
| <b>Submitter Role:</b>  | Commission Staff  |
| <b>Submission Date:</b> | 10/22/2018 2:07:02 PM   |
| <b>Docketed Date:</b>   | 10/22/2018  |

# Memorandum

To: **Bryan Cash**  
Assistant Secretary for Administration and Finance  
California Natural Resources Agency  
1416 Ninth Street, Suite 1311  
Sacramento, CA 95814

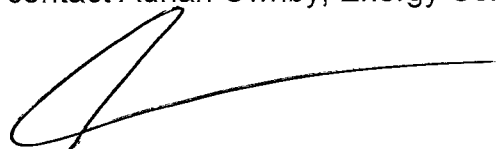
July 16, 2018

From: **California Energy Commission**      Drew Bohan  
1516 Ninth Street                              Executive Director  
Sacramento, CA 95814-5512

Subject: **STANDARD FORM 399 FOR BUILDING ENERGY EFFICIENCY STANDARDS  
RULEMAKING PROCEEDING**

Attached for your review and signature is a Department of Finance Standard Form 399, Economic and Fiscal Impact Statement. The form is being submitted in support of a rulemaking proceeding for the California Building Energy Efficiency Standards, Title 24, Parts 1 and 6. This rulemaking will update existing energy efficiency standards for newly constructed buildings, and additions and alterations to existing buildings. We are submitting this form to you for the "Agency Secretary" signature (see page 5 of STD. 399), which will need to be provided to the Office of Administrative Law to initiate the public notice for the rulemaking.

If you have any questions regarding the content or the processing of this form, please contact Adrian Ownby, Energy Commission Specialist III, at (916) 651-3008.



Drew Bohan  
Executive Director

Attachment

cc: Adrian Ownby  
Payam Bozorghani  
Christopher Meyer

**ECONOMIC AND FISCAL IMPACT STATEMENT  
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

**ECONOMIC IMPACT STATEMENT**

|  |                                       |  |   |
|--|---------------------------------------|--|---|
| DEPARTMENT NAME<br><b>California Energy Commission</b>   | CONTACT PERSON<br><b>Adrian Ownby</b> | EMAIL ADDRESS<br><b>adrian.ownby@energy.ca.gov</b> | TELEPHONE NUMBER<br><b>916-651-3008</b> |
| DESCRIPTIVE TITLE FROM NOTICE REGISTER OR FORM 400<br><b>Revisions to the California Energy Code</b> |                                       |  | NOTICE FILE NUMBER<br><b>Z</b>          |

**A. ESTIMATED PRIVATE SECTOR COST IMPACTS** *Include calculations and assumptions in the rulemaking record.*

1. Check the appropriate box(es) below to indicate whether this regulation:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> a. Impacts business and/or employees  | <input checked="" type="checkbox"/> e. Imposes reporting requirements   |
| <input checked="" type="checkbox"/> b. Impacts small businesses           | <input type="checkbox"/> f. Imposes prescriptive instead of performance |
| <input checked="" type="checkbox"/> c. Impacts jobs or occupations        | <input checked="" type="checkbox"/> g. Impacts individuals              |
| <input checked="" type="checkbox"/> d. Impacts California competitiveness | <input type="checkbox"/> h. None of the above (Explain below):          |

*If any box in Items 1 a through g is checked, complete this Economic Impact Statement.  
If box in Item 1.h. is checked, complete the Fiscal Impact Statement as appropriate.*

2. The California Energy Commission estimates that the economic impact of this regulation (which includes the fiscal impact) is:  
(Agency/Department)

- Below \$10 million  
 Between \$10 and \$25 million  
 Between \$25 and \$50 million  
 Over \$50 million *[If the economic impact is over \$50 million, agencies are required to submit a [Standardized Regulatory Impact Assessment](#) as specified in Government Code Section 11346.3(c)]*

3. Enter the total number of businesses impacted: 20,318-43,000

Describe the types of businesses (Include nonprofits): building construction, energy efficiency, and building owners; see memorandum

Enter the number or percentage of total businesses impacted that are small businesses: 74%

4. Enter the number of businesses that will be created: 20-30 eliminated: none

Explain: See explanatory memorandum

5. Indicate the geographic extent of impacts:  Statewide  
 Local or regional (List areas): \_\_\_\_\_

6. Enter the number of jobs created: 599-878 and eliminated: none

Describe the types of jobs or occupations impacted: Construction-related jobs and occupations; companies that provide energy efficient products and services will benefit from increased demand for those products and services.

7. Will the regulation affect the ability of California businesses to compete with other states by making it more costly to produce goods or services here?  YES  NO

If YES, explain briefly: See explanatory memorandum. While there are initial up-front costs imposed by the Energy Code (see B1 and B4 below), there are long-term savings that repay those costs by a significantly positive ratio. Past changes to the Energy Code continue to generate benefits even as the latest version of the Energy Code increases initial costs.

**ECONOMIC AND FISCAL IMPACT STATEMENT****(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

**ECONOMIC IMPACT STATEMENT (CONTINUED)****B. ESTIMATED COSTS** *Include calculations and assumptions in the rulemaking record.*

1. What are the total statewide dollar costs that businesses and individuals may incur to comply with this regulation over its lifetime? \$ 2,024,462,083
- a. Initial costs for a small business: \$ 2,695 Annual ongoing costs: \$ 1,114 Years: 10
- b. Initial costs for a typical business: \$ 2,695 Annual ongoing costs: \$ 1,114 Years: 10
- c. Initial costs for an individual: \$ 2,748 Annual ongoing costs: \$ 768 Years: 30
- d. Describe other economic costs that may occur: Increased costs will results from improved building envelopes (wall, roofs, windows), HVAC equipment and testing, improved lighting and water heating technology requirements
2. If multiple industries are impacted, enter the share of total costs for each industry: Nonresidential Construction (12%), Residential Construction (88%)
3. If the regulation imposes reporting requirements, enter the annual costs a typical business may incur to comply with these requirements. Include the dollar costs to do programming, record keeping, reporting, and other paperwork, whether or not the paperwork must be submitted. \$ \_\_\_\_\_
4. Will this regulation directly impact housing costs?  YES  NO  
If YES, enter the annual dollar cost per housing unit: \$ 684  
Number of units: 164,741
5. Are there comparable Federal regulations?  YES  NO  
Explain the need for State regulation given the existence or absence of Federal regulations: Federal regulations do not apply to state, local and private sector construction in California.  
Enter any additional costs to businesses and/or individuals that may be due to State - Federal differences: \$ \_\_\_\_\_

**C. ESTIMATED BENEFITS** *Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. Briefly summarize the benefits of the regulation, which may include among others, the health and welfare of California residents, worker safety and the State's environment: Individuals and businesses will benefit from the reduction in energy costs. Businesses that provide energy efficiency products and services may experience an increase in business. All state and local government agencies and their tenants will benefit.
2. Are the benefits the result of:  specific statutory requirements, or  goals developed by the agency based on broad statutory authority?  
Explain: The Energy Commission has authority granted by statute to adopt statewide building energy efficiency standards.
3. What are the total statewide benefits from this regulation over its lifetime? \$ 3,877,917,198
4. Briefly describe any expansion of businesses currently doing business within the State of California that would result from this regulation: California businesses producing energy efficiency products/technologies that meet or exceed the proposed Standards will likely expand their sales of those products/technologies due to the implementation of these proposed Standards.

**D. ALTERNATIVES TO THE REGULATION** *Include calculations and assumptions in the rulemaking record. Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. List alternatives considered and describe them below. If no alternatives were considered, explain why not: At this time the Commission is not aware of alternatives to the proposed regulations that would be equally effective and have a lower adverse impact on economic interests. More costly alternatives were considered and rejected. For more information see the FSOR.



**ECONOMIC AND FISCAL IMPACT STATEMENT  
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

**ECONOMIC IMPACT STATEMENT (CONTINUED)**

2. Summarize the total statewide costs and benefits from this regulation and each alternative considered:

Regulation: Benefit: \$ 3,877,917,198 Cost: \$ 2,024,462,083  
 Alternative 1: Benefit: \$ 3,885,986,534 Cost: \$ 2,027,618,207  
 Alternative 2: Benefit: \$ 3,885,655,749 Cost: \$ 2,027,427,129

3. Briefly discuss any quantification issues that are relevant to a comparison of estimated costs and benefits for this regulation or alternatives:

The Standards are fundamentally performance based (with the exception of limited mandatory provisions).

4. Rulemaking law requires agencies to consider performance standards as an alternative, if a regulation mandates the use of specific technologies or equipment, or prescribes specific actions or procedures. Were performance standards considered to lower compliance costs?

YES  NO

Explain: Performance Standards are a fundamental part of the proposed Standards.

**E. MAJOR REGULATIONS** *Include calculations and assumptions in the rulemaking record.*

*California Environmental Protection Agency (Cal/EPA) boards, offices and departments are required to submit the following (per Health and Safety Code section 57005). Otherwise, skip to E4.*

1. Will the estimated costs of this regulation to California business enterprises exceed \$10 million?  YES  NO

*If YES, complete E2. and E3  
If NO, skip to E4*

2. Briefly describe each alternative, or combination of alternatives, for which a cost-effectiveness analysis was performed:

Alternative 1: \_\_\_\_\_

Alternative 2: \_\_\_\_\_

(Attach additional pages for other alternatives)

3. For the regulation, and each alternative just described, enter the estimated total cost and overall cost-effectiveness ratio:

Regulation: Total Cost \$ \_\_\_\_\_ Cost-effectiveness ratio: \$ \_\_\_\_\_

Alternative 1: Total Cost \$ \_\_\_\_\_ Cost-effectiveness ratio: \$ \_\_\_\_\_

Alternative 2: Total Cost \$ \_\_\_\_\_ Cost-effectiveness ratio: \$ \_\_\_\_\_

4. Will the **regulation subject to OAL review** have an estimated economic impact to business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented?

YES  NO

If YES, agencies are required to submit a Standardized Regulatory Impact Assessment (SRIA) as specified in Government Code Section 11346.3(c) and to include the SRIA in the Initial Statement of Reasons.

5. Briefly describe the following:

The increase or decrease of investment in the State: \_\_\_\_\_

The incentive for innovation in products, materials or processes: \_\_\_\_\_

The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency: \_\_\_\_\_

**ECONOMIC AND FISCAL IMPACT STATEMENT  
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

**FISCAL IMPACT STATEMENT**

**A. FISCAL EFFECT ON LOCAL GOVERNMENT** *Indicate appropriate boxes 1 through 6 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

1. Additional expenditures in the current State Fiscal Year which are reimbursable by the State. (Approximate)  
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ \_\_\_\_\_

a. Funding provided in \_\_\_\_\_

Budget Act of \_\_\_\_\_ or Chapter \_\_\_\_\_, Statutes of \_\_\_\_\_

b. Funding will be requested in the Governor's Budget Act of \_\_\_\_\_

Fiscal Year: \_\_\_\_\_

2. Additional expenditures in the current State Fiscal Year which are NOT reimbursable by the State. (Approximate)  
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ \_\_\_\_\_

*Check reason(s) this regulation is not reimbursable and provide the appropriate information:*

a. Implements the Federal mandate contained in \_\_\_\_\_

b. Implements the court mandate set forth by the \_\_\_\_\_ Court.

Case of: \_\_\_\_\_ vs. \_\_\_\_\_

c. Implements a mandate of the people of this State expressed in their approval of Proposition No. \_\_\_\_\_

Date of Election: \_\_\_\_\_

d. Issued only in response to a specific request from affected local entity(s).

Local entity(s) affected: \_\_\_\_\_  
\_\_\_\_\_

e. Will be fully financed from the fees, revenue, etc. from: \_\_\_\_\_

Authorized by Section: \_\_\_\_\_ of the \_\_\_\_\_ Code;

f. Provides for savings to each affected unit of local government which will, at a minimum, offset any additional costs to each;

g. Creates, eliminates, or changes the penalty for a new crime or infraction contained in \_\_\_\_\_

3. Annual Savings. (approximate)

\$ \_\_\_\_\_

4. No additional costs or savings. This regulation makes only technical, non-substantive or clarifying changes to current law regulations.

5. No fiscal impact exists. This regulation does not affect any local entity or program.

6. Other. Explain See memorandum for discussion.

**ECONOMIC AND FISCAL IMPACT STATEMENT**

**(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

**FISCAL IMPACT STATEMENT (CONTINUED)**

**B. FISCAL EFFECT ON STATE GOVERNMENT** Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.

1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ \_\_\_\_\_

It is anticipated that State agencies will:

a. Absorb these additional costs within their existing budgets and resources.

b. Increase the currently authorized budget level for the \_\_\_\_\_ Fiscal Year

2. Savings in the current State Fiscal Year. (Approximate)

\$ \_\_\_\_\_

3. No fiscal impact exists. This regulation does not affect any State agency or program.

4. Other. Explain See memorandum for explanation.

**C. FISCAL EFFECT ON FEDERAL FUNDING OF STATE PROGRAMS** Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.

1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ \_\_\_\_\_

2. Savings in the current State Fiscal Year. (Approximate)

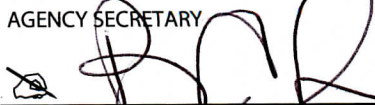
\$ \_\_\_\_\_

3. No fiscal impact exists. This regulation does not affect any federally funded State agency or program.


4. Other. Explain The proposed regulations impact state-financed buildings but are not expected to directly impact federal funding of state programs except in limited circumstances.

|  |                 |
|--|-----------------|
| FISCAL OFFICER SIGNATURE<br> | DATE<br>7-23-18 |
|--|-----------------|

The signature attests that the agency has completed the STD. 399 according to the instructions in SAM sections 6601-6616, and understands the impacts of the proposed rulemaking. State boards, offices, or departments not under an Agency Secretary must have the form signed by the highest ranking official in the organization.

|  |                 |
|--|-----------------|
| AGENCY SECRETARY<br> | DATE<br>7/23/18 |
|--|-----------------|

Finance approval and signature is required when SAM sections 6601-6616 require completion of Fiscal Impact Statement in the STD. 399.

|  |                    |
|--|--------------------|
| DEPARTMENT OF FINANCE PROGRAM BUDGET MANAGER<br> | DATE<br>8/10/19/18 |
|--|--------------------|



**ATTACHMENT TO  
FULLY EXECUTED ECONOMIC IMPACT STATEMENT  
July 7, 2018**

**A. ESTIMATED PRIVATE SECTOR COST IMPACTS**

**2. Estimated economic impact.**

The proposed 2019 Building Efficiency Standards are not a “Major Regulation” as defined by Government Code section 11342.548 for which a Standardized Regulatory Impact Assessment is required. Section 11342.548 defines “Major Regulation” as “any proposed adoption, amendment, or repeal of a regulation *subject to review by the Office of Administrative Law pursuant to Article 6 [of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code]* that will have an economic impact on California business enterprises and individuals in an amount exceeding fifty million dollars as estimated by the agency” (emphasis added). Because the proposed 2019 Building Efficiency Standards are “building standards” as defined by Health and Safety Code section 18909 and Government Code section 11342.530, they are not “subject to review by the office of administrative law pursuant to Article 6.” Consequently they do not meet the definition of a Major Regulation.<sup>1</sup>

**3. Number of businesses impacted.**

The following industries are the most positively impacted by increased energy efficiency, renewable generation and demand response<sup>2</sup>:

- Residential Building Construction (NAICS 2361)
- Nonresidential Building Construction (NAICS 2362)
- Electrical Contractors (NAICS 23821)
- Plumbing, Heating, and Air-Conditioning Contractors (NAICS 23822)
- Drywall and Insulation Contractors (NAICS 23831)
- Manufacturing (NAICS 32412, 3279, 3332, 3334, 3336, 3341, 3342, 3344, 3345, 3351, 3352, 3353, 3359 (part))
- Advertising and Related Services (NAICS 5418)
- Engineering Services, Architectural Services, Environmental Consulting Services, Other Scientific and Technical Consulting Services (NAICS 541 (part))
- Management of Companies and Enterprises, Public Administration (NAICS 5511, 92 (part))

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<sup>1</sup> See Government Code Section 11342 and Health and Safety Code 18930.

<sup>2</sup> The University of California, Berkeley "California Workforce Training and Needs Assessment for Energy Efficiency, Distributed Generation and Demand Response." See Table 3.10 et seq., pages 69-75, [http://www.irle.berkeley.edu/vial/publications/WET\\_Part1.pdf](http://www.irle.berkeley.edu/vial/publications/WET_Part1.pdf).



- Office Administrative Services (NAICS 5611)

California's Energy Code is part of the California Building Construction Standards and therefore impact nearly all newly constructed buildings, as well as to specific additions and alterations to nearly all existing buildings. Therefore, the Energy Code may eventually impact all business and individuals in the state that own buildings. Based on the number of businesses in the "Advanced Energy Employment" sector, we estimate between 20,318 to 43,000 businesses impacted by the implementation of the 2019 Energy Code.<sup>3</sup> This range reflects differences in assumptions based on consideration of only businesses impacted by the measures implemented in the 2019 Energy Code in the Energy Efficiency sector at the low end, and all businesses in the Advanced Energy sector being impacted at the high end.

**4 and 6. Number of businesses and jobs created and eliminated.**

The proposed Standards are cost effective over the life of the measure.<sup>4</sup> Increased energy efficiency in California's buildings will have short term initial costs, but long-term benefits from reduced utility costs. For individuals this will result in increased disposable income and for businesses lower costs and (most likely) additional profit. The following industries are the most positively impacted by increased energy efficiency, renewable generation and demand response<sup>5</sup>:

- Residential Building Construction (NAICS 2361)
- Nonresidential Building Construction (NAICS 2362)
- Electrical Contractors (NAICS 23821)
- Plumbing, Heating, and Air-Conditioning Contractors (NAICS 23822)
- Drywall and Insulation Contractors (NAICS 23831)
- Manufacturing (NAICS 32412, 3279, 3332, 3334, 3336, 3341, 3342, 3344, 3345, 3351, 3352, 3353, 3359 (part))
- Advertising and Related Services (NAICS 5418)
- Engineering Services, Architectural Services, Environmental Consulting Services, Other Scientific and Technical Consulting Services (NAICS 541 (part))
- Management of Companies and Enterprises, Public Administration (NAICS 5511, 92 (part))
- Office Administrative Services (NAICS 5611)

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<sup>3</sup> See TN #223071-2 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223071-2>).

<sup>4</sup> For the first time the Energy Commission is proposing to adopt an indoor air quality Standard as a health and safety Standard that is not demonstrably cost effective. Public Resources Code section 25402.8 states: "When assessing new building standards for residential and nonresidential buildings related to the conservation of energy, the commission shall include in its deliberations the impact that these standards would have on indoor air pollution problems."

<sup>5</sup> The University of California, Berkeley "California Workforce Training and Needs Assessment for Energy Efficiency, Distributed Generation and Demand Response." See Table 3.10 et seq., pages 69-75, [http://www.irl.berkeley.edu/vial/publications/WET\\_Part1.pdf](http://www.irl.berkeley.edu/vial/publications/WET_Part1.pdf).

Increased employment based on the implementation of the 2019 Energy Code will result in a range of jobs created between 599 and 878 jobs.<sup>6</sup> This estimate is based on estimated direct employment and induced employment. Indirect employment (the supplier effect) was not estimated due to difficulties in estimate upstream and downstream employment impacts and concerns regarding out-of-state suppliers.

The number of businesses created is assumed to be a function of the number of jobs created within the state. Advanced Energy sector firm size is generally smaller, with the majority of businesses having 25 or fewer employees. We assume that 50% of jobs in small businesses result in business creation, and that no jobs in large firms will result in business creation. Based on the estimated number of jobs created by the implementation of the 2019 Energy Code, we estimate between 20 and 30 businesses will be created based on the implementation of the 2019 Energy Code.<sup>7</sup>

**7. Will the regulation affect the ability of California businesses to compete with other states by making it more costly to produce goods or services here?**

California's Energy Code applies to buildings built in the state of California. No California construction businesses should be at a disadvantage versus businesses in other states when all builders and manufacturers have to meet the same standards to build or sell building products in California. More broadly, while there are initial up-front costs imposed by the Energy Code, there are long-term savings that typically repay those costs by a significantly positive ratio (in the case of the 2019 Energy Code that ratio is ~1.9:1). Past changes to the Energy Code continue to generate benefits even as the latest version of Energy Code increases initial costs. More simply, the Energy Code helps create long-term economic growth and stability by increasing the disposable income of Californians and California businesses in the longer term. California has aggressively pursued environmental and energy regulations for well over a decade now while simultaneously out-performing the overall United States growth in per-capita personal income.<sup>8</sup>

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<sup>6</sup> See TN #223071-2 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223071-2>) page 10 and TN #223071-1 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223071-1>).

<sup>7</sup> Ibid.

<sup>8</sup> See (<https://www.bea.gov/regional/bearfacts/pdf.cfm?fips=06000&areatype=STATE&geotype=3>), (<https://www.infoplease.com/business-finance/poverty-and-income/capita-personal-income-state>), (<http://www.pewtrusts.org/~media/Data-Visualizations/Interactives/2016/fiscal-50/docs/2013/StatePersonalIncomeData.xlsx?la=en>) and ([https://www.bea.gov/newsreleases/regional/spi/sppi\\_newsrelease.htm](https://www.bea.gov/newsreleases/regional/spi/sppi_newsrelease.htm)). Note that California's growth in per-capita personal income increases the US average growth which reduces the difference between California and the average for the rest of the nation.

## **B. ESTIMATED COSTS**

### **1. What are the total statewide dollar costs that businesses and individuals may incur to comply with this regulation over its lifetime?**

The amount listed on line B1 is the total on the Summary worksheet sheet of the 2019 Form 399 Calculations spreadsheet. This value is the sum of the residential and nonresidential measures costs for all newly constructed buildings, additions and alternations for 2020. The question specifies the “lifetime of the regulation,” and these regulations are expected to have an extended lifetime. Staff considered and rejected interpreting the “regulation over its lifetime” to mean three to five years, which is the cycle of regular updates to the Energy Code, and instead opted to provide annual data. The life expectancy for residential and nonresidential buildings is assumed to be 30 years. For mechanical and electrical equipment in nonresidential buildings and outdoor lighting the life expectancy is assumed to be 15 years.

#### **1(a, b) Initial costs for a small business and initial costs for a typical business.**

The Energy Code does not differentiate between a small business and a typical business but rather impact construction that may occur in nearly all public and private buildings in California. To provide this estimate, we calculated a weighted per square foot cost based on the proposed changes to the Standards, the types of nonresidential buildings the Energy Code would be applied to, and the estimated newly constructed buildings by nonresidential building type from 2012 through 2020. We then applied this weighted average cost per square foot (\$.53) to a hypothetical 15,000 square foot generic nonresidential building. This weighted average reflects a range of cost per square foot values from \$.15 (for Refrigerated Warehouses in Coastal Climate Zones) to \$1.07 (for Primary Schools in Climate Zone 16) for 13 standard nonresidential building types across all 16 Energy Code climate zones. Staff calculated the cost impact of the proposed Energy Code from additions and alterations activity using a multiplier estimate based on the ratio of dollar activity of commercial newly constructed buildings to commercial additions and alterations provided by the California Industrial Relations Board (see CIRB Statewide Nonresidential worksheet in the 399 Excel file). The additions and alternations cost is included in the statewide total dollar costs, but that cost is not reflected in the small business or typical business initial costs. The initial costs associated with the proposed Energy Code for newly constructed buildings will be substantially higher than the initial costs for additions and alterations in existing nonresidential buildings. To make a conservative estimate of the cost to a “typical business,” the cost per square foot estimate was applied to a scenario that a “typical business” uses a 15,000 square foot newly constructed building. It should be noted that, assuming nonresidential construction costs average \$150 per square foot, the additional costs from the proposed Energy Code will increase the cost of the building by

approximately 0.34%.<sup>9</sup> It is anticipated that this very minor marginal increase in average costs will have no substantive impact on the commercial construction industry overall. Staff calculated the initial and annual impacts shown in the Form 399 sections B(1)(a) and (b) using the following terms: 20% down payment, 6.9% interest rate, 10-year term, 2% property tax rate, and insurance costs equal to 1% of the total value.

**1(c) Initial costs to an individual.**

The initial cost to an individual of \$9,900 is based on the increased single-family house average cost, which ranges, depending on climate zone it is built in, between \$8,205 and \$17,511<sup>10</sup> for a prototype single-family home. The value listed in the summary is a weighted average for the single-family newly constructed buildings estimated for 2020. Low-rise multifamily buildings (those with three or fewer habitable stories) are subject to residential Energy Code; however, the costs of residential construction impacts ownership entities not individual tenants directly. If low-rise multifamily residential units are considered in the calculation, the average initial cost for an individual would be \$8,794. The final numbers shown in the Form 399 sections B(1)(c) assume these costs are financed under these terms: 20% down payment, 4.3% interest rate, 30 year term, 2% property tax rate, and an assumed annual insurance premium cost equal to 1% of the value.

Staff calculated the cost impact of the proposed Energy Code from additions and alterations activity using a multiplier estimate based on the ratio of dollar activity of residential newly constructed buildings to residential additions and alterations provided by the California Industrial Relations Board (see "CIRB Statewide Residential" worksheet in the "2019 Form 399 Calculations.xlsx" file). The costs of residential additions and alternations are included in the statewide total dollar costs, but are not reflected in the individual initial costs. The initial costs associated with the proposed Energy Code for newly constructed buildings will be substantially higher than the initial costs for additions and alterations to existing residential building.

**4. Will the regulation directly impact housing costs?**

As noted in 1(c) above, the average initial cost per housing unit (single-family and low-rise multifamily) of estimated newly constructed housing in 2020 is \$8,794. The final numbers shown in the Form 399 assume the single family home portion of these costs are financed under these terms: 20% down payment, 4.3% interest rate, 30-year term, 2% property tax rate, and an assumed annual insurance premium cost equal to 1% of the value. The number of housing units listed at 164,741 is represents the total estimated 117,070 single-family homes and the 47,671 low rise multifamily units of newly constructed housing for 2020.

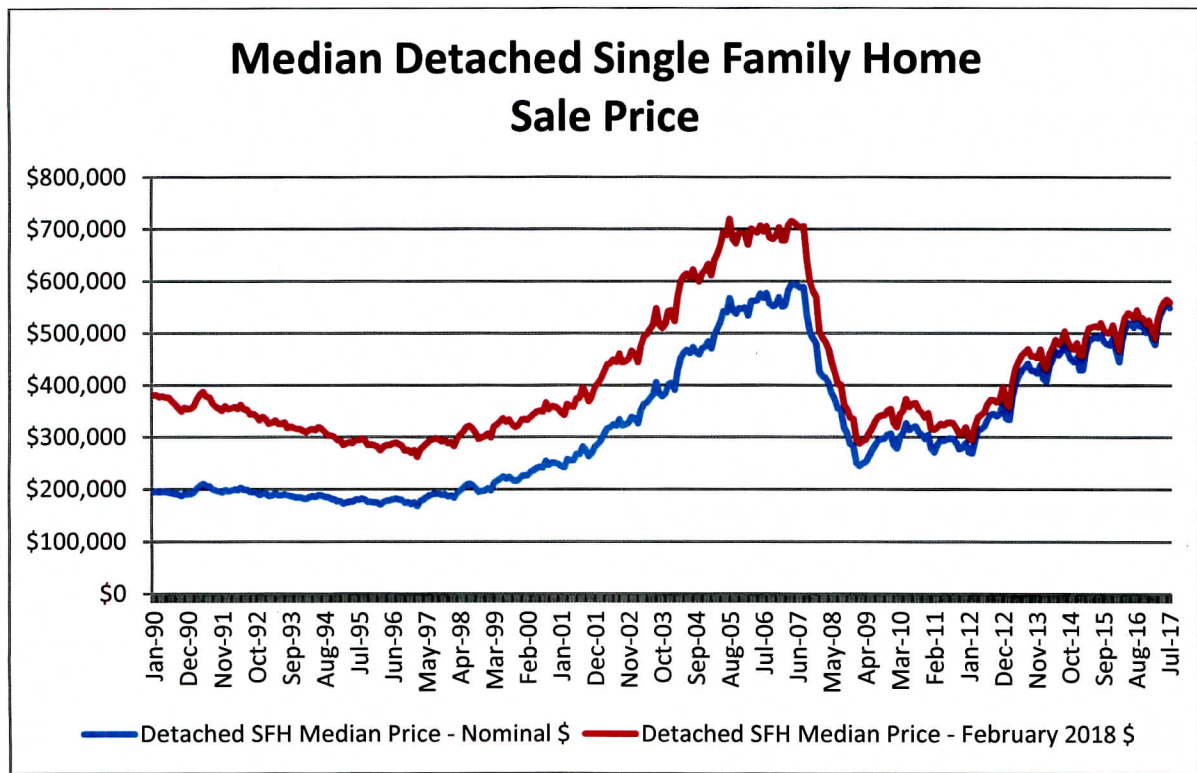
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<sup>9</sup> \$150 per square foot is arguably a low number (<http://evstudio.com/construction-cost-per-square-foot-for-office-buildings/>).

<sup>10</sup> Note that the \$17,653 cost is an outlier reflecting costs for Climate Zone 15 which encompasses the southern California desert regions. The next highest cost is \$12,565.



**California Single-Family Home Prices:** According to the California Association of Realtors (CAR), from January 2009 through December 2016 the statewide median detached single-family home price went from \$249,960 to \$508,870. That is a 103% increase in the median detached single-family home price. These numbers are bit skewed in that they cover the great recession. Looking at the same data set, the statewide median home price in January 1990 was \$194,952, adjusted for CPI inflation that would equal \$373,090 or approximately \$135,000 less than the current \$508,870 statewide median home price. The chart below shows median detached single-family home prices (in nominal \$ and February 2018 \$) from January 1990 through September 2016.



Average median single-family home monthly inflation has been approximately \$2,300 for the past three years.<sup>11</sup> Recent CAR data for 2016-2017 shows the same above inflation level increase in median home price. According to CAR from July 2016 to July 2017 the median sold single-family home price increased 7.4% from \$511,420 to \$529,460. In some markets the increase during that same period was over 10%.

<sup>11</sup> This is the monthly average of a series of rolling 12-month averages from January 2015 through July 2017. See "Median Price" worksheet in the "2019 Form 399 Calculations.xlsx" file.

There is significant evidence that the cost increases associated with complying with Energy Code have no statistically significant impact on median single family home sale prices.<sup>12</sup> Overall construction related costs can have a significant impact on what gets built, where it gets built, when it gets built and the profitability of what gets sold. Sales price is a much more complicated issue. This is common sense. If it were not the case, then anything could be built anywhere the builder determined and sold for whatever price the builder asks.

The current single family housing market in California suffers primarily from inadequate supply and (possibly) inflated demand or real pent-up demand.<sup>13</sup> The former is possibly due to systemic fallout from the housing bubble collapse of 2007-08 when many housing contractors left the marketplace. Further complicating inadequate supply in the single family housing and rental housing marketplace is the availability of land appropriate for housing (which is by definition a finite good) and land use planning laws. The demand related issue is due to the nature of the housing lending market. Loans are the primary vehicle through which single family homes are purchased. Inadequate underwriting of loans can result in excessive risk taking in lending and by extension create increased “demand” for housing. This was essentially what occurred in the run-up to the 2007-08 housing bubble collapse. Single family home median sale prices have increased in real dollar terms to approximately the same point they were in 2003 and this has occurred in spite of the wage stagnation for a significant portion of California’s working population.<sup>14</sup> There would seem to be only likely culprits for this price increase in the face of wage stagnation and low inflation: 1) lending reforms and requirements instituted after the 2007-08 housing collapse have failed to curb excessive risk-taking in lending, and/or 2) inadequate production for the past decade has created an inadequate housing supply for existing demand.<sup>15</sup> Based on this, our assessment is that the proposed 2019 Energy Code will have the no statistically significant supply or median sale price impact on the single family housing market.

### C. ESTIMATED BENEFITS

#### 3. What are the total statewide benefits from this regulation over its lifetime?

The total statewide benefit listed on the Form 399 on line C3 is the total on the Summary worksheet sheet of the 2019 Form 399 Calculations spreadsheet. This is the sum of the time dependent energy valuation net present value energy savings for residential and nonresidential measures for all newly constructed buildings, additions and alternations for 2020. The question specifies the “lifetime of the regulation” and these regulations are expected to have an extended lifetime. Staff considered and

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<sup>12</sup> See TN #223055 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223055>).

<sup>13</sup> See <http://hcd.ca.gov/policy-research/plans-reports/docs/California's-Housing-Future-Full-Public-Draft.pdf>.

<sup>14</sup> See <http://www.lao.ca.gov/LAOEconTax/Article/Detail/256>.

<sup>15</sup> See TN #223054 figures 1.1 and 1.2 (<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223054>).



rejected interpreting the “regulation over its lifetime” to mean three to five years, which is the cycle of regular updates to the Energy Code, and instead opted to provide annual data. The life expectancy for residential buildings measures is assumed to be 30 years. The life expectancy for residential and nonresidential buildings is assumed to be 30 years. For mechanical and electrical equipment in nonresidential buildings and outdoor lighting the life expectancy is assumed to be 15 years. The value of greenhouse gas emission reductions, as currently valued is included in the calculation of statewide benefits.

Beyond the monetary benefits, the Energy Commission estimates that the implementation of the 2019 Energy Code will reduce statewide annual electricity consumption by about 653 gigawatt-hours per year, and natural gas consumption by 9.8 million therms per year. In addition, there will be a net reduction in the emissions of nitrous oxide by roughly 225,000 pounds per year, sulfur oxides by 590 pounds per year, carbon monoxide by 61,000 pounds per year, and particulate matter by 7,400 pounds per year. The standards will also reduce statewide greenhouse gas emissions by an amount equivalent in effect to 493 million pounds of carbon dioxide (CO<sub>2</sub>e) annually. Finally, there will be an estimated decrease of 246 million gallons water consumption per year from implementing the 2019 Energy Code.<sup>16</sup>

#### **D. ALTERNATIVES TO THE REGULATION**

##### **1. List alternatives considered and describe them below. If no alternatives were considered, explain why not:**

For more than thirty-five years, legislative enactments and state energy policies have directed the Energy Commission to adopt cost-effective building standards to improve energy efficiency and thereby improve the state’s economy, energy security, and environment.<sup>17</sup> At this time the Commission is not aware of alternatives to the proposed regulations that would be more effective than the proposed regulations in achieving the energy-efficiency goals of these directives, or that would be equally effective and have a lower adverse impact on small businesses (or on any other economic interests). However, it is quite likely that during the course of the rulemaking, the Commission will receive comments that are helpful in improving the proposed Energy Code. Moreover, during the initial, informal stage of the rulemaking process, the Commission conducted an extensive public process considered many suggestions from stakeholders about (1) alternatives that could improve the feasibility of the Commission’s preliminary versions of the proposed regulations or could reduce their adverse impacts; (2) the technical and cost-effectiveness analyses of those preliminary proposals; and (3) the language in those

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<sup>16</sup> See TN #222679 (<https://efiling.energy.ca.gov/getdocument.aspx?tn=222679>).

<sup>17</sup> See Public Resources Code sections 25007 and 25402(a)(1), (a)(3), & (b)(3); 2016 Integrated Energy Policy Report Update ([http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-01/TN216281\\_20170228T131538\\_Final\\_2016\\_Integrated\\_Energy\\_Policy\\_Report\\_Update\\_Complete\\_Report.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-01/TN216281_20170228T131538_Final_2016_Integrated_Energy_Policy_Report_Update_Complete_Report.pdf)).

proposals. The main suggestions and the Commission's responses are discussed in the Initial and Final Statement of Reasons.

The two alternatives provided in D2 reflect two scenarios:

- Alternative 1 reflects the costs and benefits assuming the Energy Commission moved forward with the Exhaust Air Heat Recovery Measure and the Dock Seals Measure as part of the 2019 Energy Code.
- Alternative 2 reflects the costs and benefits assuming the Energy Commission had moved forward with the Exhaust Air Heat Recovery Measure as part of the 2019 Energy Code.

There are an enormous number of potential alternative cost and benefit scenarios to the current proposed 2019 Energy Code. Included with this submission is file containing dozens of possible measures discussed at the very beginning of the 2019 Energy Code development cycle.<sup>18</sup> For more detailed information regarding options considered and rejected within the parameters of the current proposed set of measures, please see the Final Statement of Reasons.

**3. Briefly discuss any quantification issues that are relevant to a comparison of estimated costs and benefits for this regulation or alternatives:**

Because the Energy Code is fundamentally performance-based there are multiple options and multiple "pathways" to meeting the Energy Code. Given the plethora of available options the Energy Commission chose the most cost effective to present in this analysis.

**E. MAJOR REGULATIONS**

**4. Will the regulation subject to OAL review have an estimated economic impact to business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented?**

The proposed 2019 Building Efficiency Standards are not a "Major Regulation" as defined by Government Code section 11342.548 for which a Standardized Regulatory Impact Assessment is required. Section 11342.548 defines "Major Regulation" as "any proposed adoption, amendment, or repeal of a regulation *subject to review by the Office of Administrative Law pursuant to Article 6 [of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code]* that will have an economic impact on California business enterprises and individuals in an amount exceeding fifty million dollars as estimated by the agency" (emphasis added). Because the proposed 2019 Building Efficiency

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<sup>18</sup> See file "2019 Title 24 Measure Suggestions – draft 2-17-2016.xlsx."



## 2019 Revisions to the California Building Energy Efficiency Standards

Standards are “building standards” as defined by Health and Safety Code section 18909 and Government Code section 11342.530, they are not “subject to review by the office of administrative law pursuant to Article 6.” See Government Code section 11342 and Health and Safety Code 18930. Consequently they do not meet the definition of a Major Regulation.

## FISCAL IMPACT STATEMENT

### A. FISCAL EFFECT ON LOCAL GOVERNMENT

#### 6. Additional expenditures and savings.

The 2019 Energy Code will be in effect in 2020. Current fiscal year is assumed to be 2017-2018. Data on local government existing building stock is very limited, as is data on proposed local government building construction. These expenditures and savings values were calculated based on an estimate that 6 percent of the total costs of nonresidential newly constructed buildings, additions and alterations to existing buildings, would apply to local government. Based on these assumptions the expenditures per year are estimated at \$10.339 million beginning in 2020, while the net present value annual savings are estimated at \$1.806 million (estimated net present value savings divided by 30) in 2020. Total estimated net present value savings over 30 years are \$54.183 million.

Only local government owned buildings, not leased buildings, are relevant to these calculations. Existing leased buildings should not be impacted except in those cases where the lease agreements allow for rent increases in the event of retrofit work. And, even in those cases, the retrofit costs would have to be for work that was impacted by the 2019 changes to the Energy Code. New leases cannot be assumed to be for newly constructed buildings, and as with the sale price of newly constructed homes, rents are not based on the costs of construction but rather are based on marketplace demand and supply.

### B. FISCAL EFFECT ON STATE GOVERNMENT

#### 1 and 2. Additional expenditures and savings

The 2019 Energy Code will be in effect in 2020. Current fiscal year is assumed to be 2017-2018. These expenditures and savings values were calculated based on an estimate that three percent of the total costs of nonresidential newly constructed buildings, additions and alterations to existing buildings, would apply to state government. The three percent figure is based on the rough (under-reported) estimate of over 12,000 buildings owned by the state and the estimated ~600,000 commercial buildings in California. Based on these assumptions the expenditures are estimated at \$5.169 million in 2020 while the net present value annual savings are estimated on line 3 at \$0.903 million (estimated net present value savings divided by 30) in 2020. Total estimated net present value savings over 30 years are \$27.091 million.

Only state government owned buildings, not leased buildings, are relevant to these calculations. Existing leased buildings should not be impacted except in those cases where the lease agreements allow for rent increases in the event of retrofit work. And, even in those cases, the retrofit costs would have to be for work that was impacted by

the 2019 changes to the Energy Code. New leases cannot be assumed to be for newly constructed buildings, and as with the sale price of newly constructed homes, rents are not based on the costs of construction but rather are based on marketplace demand and supply.

**C. FISCAL EFFECT ON FEDERAL FUNDING OF STATE PROGRAMS**

**4. Other. Explain:**

State agencies that are reimbursed for utility costs by the Federal Government may have reduced utility costs and therefore have lowered Federal reimbursements reflecting those lowered utility costs.