

CALIFORNIA BIOFUELS CAP & TRADE INITIATIVE

Biofuels reduce greenhouse gases, provide jobs and lead to economic development throughout California.

- ✓ Transportation is the single largest source of greenhouse gas emissions.
- ✓ Since fuels became subject to AB 32 in 2015, now is the time to allocate cap & trade revenues for in-state biofuels, low carbon fuels that are immediately scalable.
- ✓ Biofuels are low carbon fuels available right now for all classes of vehicles, including heavy duty.
- ✓ To meet Governor Brown's goal of reducing petroleum use in CA by 50% by 2030, an aggressive biofuels program is a necessary component.
- ✓ To meet the climate change objectives of AB 32, production and use of low carbon intensity biofuels in California should be encouraged.
- ✓ To meet the objectives of SB 535 (to stimulate employment and economic improvement in disadvantaged communities as defined by CalEnviroScreen) biofuel production and infrastructure should be encouraged in disadvantaged communities.

PROPOSAL

Allocate \$210 million of Cap and Trade funds to be dedicated to support a Biofuel Initiative based upon stimulating (1) California based biofuel production; (2) the low carbon intensity of biofuels, and (3) the benefits to disadvantaged California communities.

Because each of the biofuel types have different characteristics and needs, silos for each biofuel type (diesel alternatives, gasoline alternative and biogas/syngas) will be established with an allocation of \$70 million and a program specifically tailored for that biofuel type.

BENEFITS

The Cap & Trade Biofuel Initiative will provide the following benefits:

- In-state production of biofuels will provide meaningful employment to thousands of Californians in disadvantaged communities; biofuels provide 2 to 6 times as many jobs as their fossil fuel equivalents.
- Petroleum fuel replacement and extender fuels such as biodiesel, biomethane, biogas and ethanol have the lowest Carbon Intensities (CI) under the Low Carbon Fuel Standard and there is already fully developed technology for expanding production in CA. The vehicles exist now for using these biofuels, and biofuels are the most cost-effective means of meeting petroleum and greenhouse gas reduction goals immediately.
- To meet Governor Brown's objectives, over 7 billion gallons of low CI biofuel will be needed annually by 2030. Many of these biofuels are already coming from out-of-state to meet the LCFS targets. The LCFS should not be limited to in-state producers, but CA produced biofuels are at a competitive disadvantage when other states and countries provide production incentives for which CA companies do not qualify. Increasing the production of biofuels in CA would

stimulate economic development for the long-term benefit of all Californians.

- Substantial feedstocks exist in California for in-state biofuel production. These include agricultural, forest, livestock, wastewater and municipal waste, as well as purpose grown crops such as algae, energy beets, camelina, canola, energy cane, mustard, sorghum and others that can be grown on fallow land, intercropped in orchards and vineyards, or cultivated as part of a sustainable crop rotation program.
- Increasing in-state production of biofuels will also help California to meet its waste diversion goals, including AB 1826 (Chesbro, 2014) which requires 75% diversion of commercial organic waste as of January 1, 2015.
- Increasing in-state biofuels will help to reduce wildfire impacts by converting forest biomass from high wildfire hazard zones to transportation fuels, as Southwest Airlines has contracted to do.
- In-state production of biofuels provides a diversified and secure source of biofuels to mitigate against market manipulation and shortages of all fuels.

BIOFUEL INITIATIVE COMPONENTS

The Biofuel Initiative will have two components, (1) Production Incentives and (2) Infrastructure/Capital Development.

1. Production Incentives: Production Incentives should be paid quarterly to biofuel producers based upon the volume of fuel production while factoring in the CalEnviroScreen score (disadvantaged communities) and the Carbon Intensity reductions for that biofuel as reported to the California Air Resources Board by biofuel producers under the Low Carbon Fuel Standard. All California producers will receive a pro rata payment so long as their CI is less than their fossil fuel equivalent within their biofuel silo.

$$\text{Volume of Biofuel} \times \text{Carbon Intensity Reduction} \times \text{CalEnviroScreen Score} = \text{Production Incentive}$$

2. Infrastructure Development and Production Facilities: Each biofuel type has different infrastructure and capital needs. The chains of distribution from feedstocks to biofuel production to the end user need improvements particular to each biofuel. Because of the silo structure, each biofuel can determine what percentage of funds should go towards infrastructure improvements, and provide advice as to what those improvements should be. Again, the priorities within each silo's infrastructure program should be determined by the volume of biofuel, Carbon Intensity and CalEnviroScreen ranking.

Administration: This program shall be administered jointly by CARB and CEC.

Biofuels: Biofuels shall include renewable and waste based substitutes for diesel, gasoline, and natural gas, including, but not limited to biodiesel, ethanol, biomethane (funding shall be used for projects that produce/generate transportation or pipeline quality "High Btu" biofuel), biogas, syngas and renewable diesel (excluding co-processing of biomass at petroleum refineries), used preferably for transportation, but also for generating heat and power.

Differences from AB118, LCFS and RFS: AB 118 funds are geared towards specific program grants and only a relatively small amount goes towards funding biofuels (typically 20% or less). CA's LCFS Program has faced legal challenges that delayed the realization of intended benefits. The program is

scheduled for re-adoption in February 2015 with actual implementation at least one year later. The federal RFS program has been delayed for over one year and continues to be unpredictable. All of these programs are uncertain and the amount of funding inadequate. The biofuels industry in California needs support and a consistent market signal now.

SUPPORTERS

Aemetis (Keyes)

Altitude Fuel (Santa Monica)

Baker Commodities (Hanford, Kerman and Vernon)

Biodico Sustainable Biorefineries (Five Points, Port Hueneme, Santa Barbara and Ventura)

Bioenergy Association of California (Statewide Association of more than 50 local governments, private companies and public agencies converting organic waste to energy)

California Biodiesel Alliance (Statewide Association)

Calgren (Pixley)

Clean Energy Renewable Fuels

(Acton, Anaheim, Anaheim Hills, Antioch, Apple Valley, Arcadia, Arcata, Artesia, Azusa, Bakersfield, Baldwin Park, Banning, Barstow, Beaumont, Bermuda Dunes, Beverly Hills, Bloomington, Blythe, Boron, Borrego Springs, Brawley, Brentwood, Buena Park, Burbank, Buttonwillow, Calipatria, Camarillo, Camp Pendleton, Canoga Park, Canyon Country, Carlsbad, Carpinteria, Carson, Castroville, Cathedral City, Cerritos, Chatsworth, Chino, Chino Hills, Chowchilla, Chula Vista, City of Industry, Claremont, Coachella, Coalinga, Commerce, Compton, Concord, Corona, Corona del Mar, Costa Mesa, Cypress, Daly City, Dana Point, Davis, Desert Hot Springs, Diamond Bar, Duarte, El Cajon, El Centro, El Monte, Elk Grove, Encinitas, Fairfield, Felton, Fontana, Fountain Valley, Fremont, Fresno, Fullerton, Garden Grove, Gardena, Gilroy, Glendale, Goleta, Grass Valley, Gridley, Hanford, Hawthorne, Hayward, Hesperia, Hollister, Hollywood, Huntington Beach, Inglewood, Irvine, Irwindale, Joshua Tree, Jurupa Valley, Kettleman City, La Canada, La Habra Heights, La Jolla, La Puente, La Verne, Ladera Ranch, Laguna Beach, Laguna Niguel, Lake Elsinore, Lake Forest, Lakewood, Lancaster, Lathrop, Lawndale, Lebec, Livermore, Lodi, Long Beach, Los Angeles, Los Gatos, Lost Hills, Madera, Malibu, Manhattan Beach, Marina, McClellan, Milpitas, Mira Loma, Mission Viejo, Modesto, Mojave, Monrovia, Montclair, Montebello, Monterey Park, Moreno Valley, Mountain Pass, Napa, Newhall, Newport Beach, North Highlands, North Hollywood, Northridge, Norwalk, Oakland, Ojai, Ontario, Orange, Oxnard, Pacheco, Pacific Palisades, Pacifica, Palm Desert, Palm Springs, Palmdale, Palo Alto, Palos Verdes, Palos Verdes Estates, Paramount, Pasadena, Perris, Petaluma, Pleasanton, Pomona, Port Hueneme, Rancho Cordova, Rancho Cucamonga, Redlands, Redondo Beach, Ridgecrest, Riverbank, Riverside, Robbins, Rowland Heights, Sacramento, Salinas, San Anselmo, San Bernardino, San Clemente, San Diego, San Francisco, San Jose, San Juan Capistrano, San Leandro, San Luis Obispo, San Marcos, San Pedro, Santa Ana, Santa Barbara, Santa Clara, Santa Clarita, Santa Cruz, Santa Maria, Santa Monica, Santa Rosa, Seal Beach, Selma, Signal

Hill, Simi Valley, South El Monte, South Pasadena, South San Francisco, Sun Valley, Sunnyvale, Sylmar, Temecula, Thousand Palms, Torrance, Tracy, Tujunga, Tulare, Tustin, Twenty-nine Palms, Ukiah, Union City, Upland, Vacaville, Vallejo, Van Nuys, Venice, Ventura, Vernon, Victorville, Visalia, Vista, Walnut, Waterford, West Covina, West Hollywood, West Sacramento, Westlake Village, Wildomar, Wilmington, Woodside, Yermo, Yorba Linda, Yuba City and Yucca Valley)

Coalition For Renewable Natural Gas (Int'l Industry Association based in Palo Alto, representing 90% of the RNG-to-transportation fuel production in the US, and more than 50 private companies interested in the development of biofuel projects in California)

Community Fuels (Stockton and Encinitas)

Crimson Renewable Energy (Bakersfield)

Dave Williamson Biofuel Consulting (Berkeley)

Dogpatch Biofuels (San Francisco)

Elite Energy (Bakersfield and Dos Palos)

Imperial Western Products (Coachella, Corona and Selma)

Mendota Bioenergy (Five Points)

Morrison & Company (Chico)

New Leaf Biofuel (San Diego)

Pacific Ethanol (Stockton and Madera)

Pearson Fuels (Long Beach & San Diego)

Propel

(Anaheim, Arcadia, Berkeley, Chula Vista, Citrus Heights, Claremont, Elk Grove, Fremont, Fresno, Fullerton, Harbor City, Hayward, Hemet, Huntington Beach, La Mirada, Lakewood, Long Beach, Murrieta, Norwalk, Oakland, Oceanside, Ontario, Placerville, Redwood City, Rocklin, Roseville, Sacramento, San Jose, San Marcos, Sylmar, Torrance, West Sacramento, Wildomar and Wilmington)

Red Rock Ranch (Five Points)

San Diego Airport Parking Company (San Diego)

SeaHold (Perris)

Sylvatex (San Francisco)

Team Biogas (Perris)

The Jacobsen Report (Chicago, IL)

TSS Consultants (Rancho Cordova)

West Biofuels (Woodland)

Western States Oil (San Jose and San Leandro)

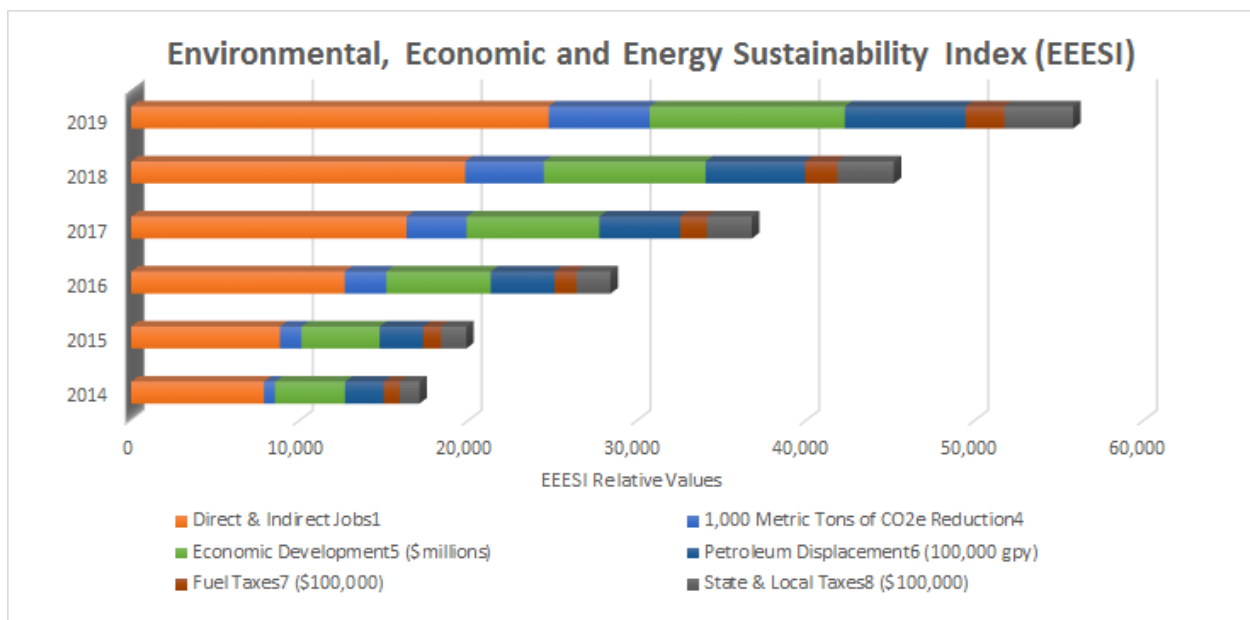
Biofuel Impacts in California

Substantial positive impacts will be realized in California as the result of the Biofuels Initiative as shown in this summary page and followed by individual pages showing the impacts of (1) biodiesel, (2) biogas and (3) ethanol. The table below shows increased California biofuel production as the result of the Biofuel Initiative from 250 mgy in 2014 to 906 mgy in 2019, with direct and indirect jobs of 24,750, a GHG reduction of nearly 6,000,000 metric tons, economic development of \$11.5 billion, petroleum displacement of 714 mgy, fuel tax revenues of \$230 million and other state and local tax revenues of \$408 million.

The \$210 million for the Biofuels Initiative will be used to incentivize more in-state production of low Carbon Intensity biofuel and support infrastructure development (from in-state feedstocks to retail distribution) which will provide economic and environmental benefits to some of California’s most disadvantaged communities. The ultimate goal is to develop in-state production to meet at least 50% of the biofuel needed under the LCFS to meet GHG mitigation targets by 2020. The Biofuel Initiative would provide proven producers of biofuels in California the financial support to expand their facilities, open new facilities, and develop capacity for new feedstocks and lower carbon intensity.

Summary of Biofuel Initiative Impacts								
Fiscal Year	Production Capacity (million gpy)	Direct & Indirect Jobs ¹	Carbon Intensity ³ (gCO ₂ e/MJ)	1,000 Metric Tons of CO ₂ e Reduction ⁴	Economic Development ⁵ (\$millions)	Petroleum Displacement ⁶ (100,000 gpy)	Fuel Taxes ⁷ (\$100,000)	State & Local Taxes ⁸ (\$100,000)
2014	250	7,875	53	663	\$4,139	2,296	\$950	\$1,166
2015	280	8,820	44	1,276	\$4,636	2,572	\$1,064	\$1,496
2016	442	12,660	35	2,470	\$6,187	3,774	\$1,300	\$2,012
2017	585	16,323	32	3,571	\$7,846	4,789	\$1,589	\$2,657
2018	736	19,800	31	4,654	\$9,578	5,896	\$1,916	\$3,340
2019	906	24,750	29	5,978	\$11,559	7,140	\$2,300	\$4,080

A graphic representation of these numbers is shown below.

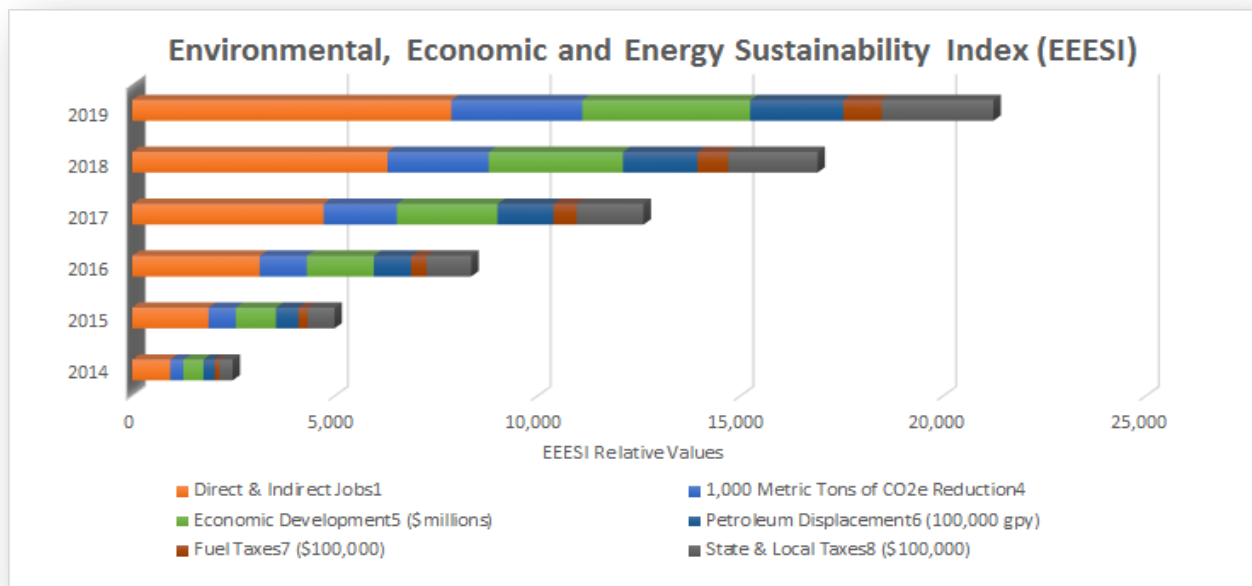


(1) Biodiesel Impacts

Last year nearly 170,000,000 gallons of low carbon diesel alternatives were used in California for Low Carbon Fuel Standard (LCFS) compliance, but only 30 million gallons were produced in-state. The \$70 million for biodiesel in the Biofuels Initiative will be used to incentivize more in-state production of low carbon intensity (CI) biodiesel and support necessary infrastructure development (from in-state feedstocks to retail distribution) which will provide economic and environmental benefits to some of California's most disadvantaged communities as highlighted below in the table.

The industry's ultimate goal is to develop in-state production to meet at least 50% of the 500 mgy (million gallons per year) needed under the LCFS to meet petroleum diesel GHG mitigation targets by 2020. The \$70 million for biodiesel would allow the industry to double capacity in year 1. Subsequent amounts of GGRF monies to incentivize production would allow the industry to meet the 50% goal by 2020. This would provide proven producers of biodiesel in California the financial support to expand their facilities, open new facilities, and develop capacity for new feedstocks and lower carbon intensity.

Annual Biofuel Initiative Biodiesel Impacts								
Fiscal Year	Production Capacity (million gpy)	Direct & Indirect Jobs ¹	Carbon Intensity ³ (gCO ₂ e/MJ)	1,000 Metric Tons of CO ₂ e Reduction ⁴	Economic Development ⁵ (\$millions)	Petroleum Displacement ⁶ (100,000 gpy)	Fuel Taxes ⁷ (\$100,000)	State & Local Taxes ⁸ (\$100,000)
2014	30	945	25	321	\$497	276	\$114	\$330
2015	60	1,890	22	669	\$993	551	\$228	\$660
2016	100	3,150	19	1,160	\$1,656	918	\$380	\$1,100
2017	150	4,725	16	1,805	\$2,483	1,378	\$570	\$1,650
2018	200	6,300	13	2,495	\$3,311	1,837	\$760	\$2,200
2019	250	7,875	10	3,229	\$4,139	2,296	\$950	\$2,750



(2) Biomethane Impacts

Biomethane is produced from biogas that has been purified for industrial, commercial and residential end-use, including for pipeline injection, as a transportation fuel and for other purposes. It is generated from the decomposition or conversion of organic waste such as food and yard waste, food processing, wood waste, agricultural and livestock waste, forestry waste, landfills and wastewater treatment facilities. California generates enough organic waste and biogas each year to produce 2.4 billion gallons of transportation fuels, enough to replace ¾ of all diesel used by California vehicles.

Rather than flaring (burning) and wasting biogas, or allowing naturally occurring methane from waste streams to vent into the atmosphere, the *Biofuels Initiative Biomethane Silo* will incentivize the capture, treatment and increased utilization of this renewable resource for use as a transportation fuel. Technologies and treatment processes employed over the last 30 years at nearly 50 projects in 16 states currently remove CO₂ and other trace constituents from biogas to produce transportation fuel grade or pipeline quality biomethane.

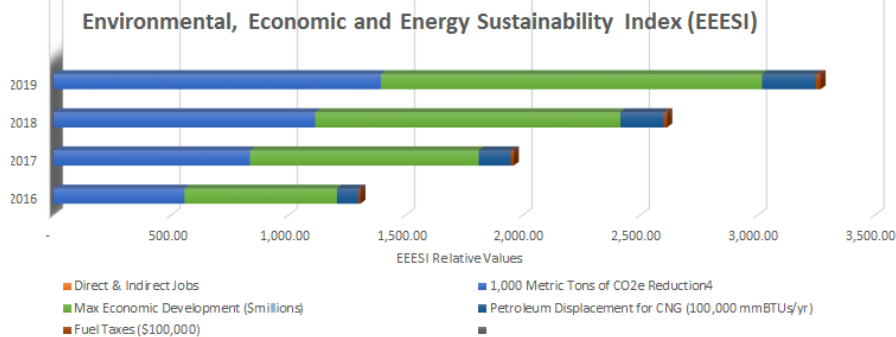
Biomethane is the lowest carbon-intensity transportation fuel available. Biomethane can reduce greenhouse gas emissions by 85 to 115 percent compared to gasoline and diesel. This is significant because transportation accounts for 40% of all greenhouse gas (GHG) emissions in California, which are among the most difficult to cost-effectively reduce.

Biomethane can be used onsite or distributed via the existing natural gas pipeline to fuel motor vehicles, especially the most polluting heavy duty and off-road vehicles and fleets. Thus, we expect dedicated Cap and Trade funds will have a direct, positive impact in the near-term incentivizing the development and interconnection of new biomethane production facilities to meet increased demand for biomethane vehicle fuel.

We propose the following allocation of Cap and Trade funds to support increased use of biomethane as a vehicle fuel:

- 3/4 of \$70 million (\$52.5 million) would help fund new biomethane generation projects at waste diversion facilities, livestock operations and dairies, landfills, wastewater treatment facilities, and other large producers of organic waste. Funds would be awarded in the amount of \$2 - \$4 million per eligible project to cover the regulatory costs associated with developing and interconnecting such projects to the natural gas grid in California. Available funding should enable the development of 13 - 26 new biomethane production facilities in California within 18 - 36 months of the award;
- 1/4 of \$70 million (\$17.5 million) would subsidize natural gas vehicles fueled primarily by biomethane, with the fleet operator or vehicle owner agreeing to a long-term contract to purchase the biomethane as a condition for receipt of funds. Available funding is estimated to result in the addition of approximately 700 vehicles fueled by biomethane.

Annual Biofuel Initiative Biomethane Impacts								
Fiscal Year	Operating Projects	Production Capacity (million gpy)	Direct & Indirect Jobs	Max Carbon Intensity (gCO ₂ e/MJ)	1,000 Metric Tons of CO ₂ e Reduction ⁴	Max Economic Development (\$millions)	Petroleum Displacement for CNG (100,000 mmBTUs/yr)	Fuel Taxes (\$100,000)
2016	13-26	68-136	1,300-2,600	26.35	558	\$650	91	\$8.0939
2017	26-39	136-204	2,600-3,900	26.35	837	\$975	137	\$12.1408
2018	39-52	204-272	3,900-5,200	26.35	1,116	\$1,300	183	\$16.1878
2019	52-65	272-340	5,200-6,500	26.35	1,394	\$1,625	228	\$20.2347



(3) Ethanol Impacts

California is home to the lowest commercially available ethanol in the country making the industry the single largest in-state contributor to carbon reductions. Five facilities produce 222 million gallons of low carbon ethanol and currently reduce over 358,000 metric tons of CO₂ annually. There is currently 1.4 billion gallons of ethanol consumed in California.

The Cap and Trade incentive program will allow these facilities and new facilities to both expand and innovate towards lower carbon scores and multiple of feedstocks. In 5 years the industry goal is to be 350 million gallons of California ethanol with an average CI of 50 reducing over 1, 568,875 metric tons of CO₂ per year.

Annual Biofuel Initiative Ethanol Impacts								
Fiscal Year	Production Capacity (million gpy)	Direct & Indirect Jobs ¹	Carbon Intensity ³ (gCO ₂ e/MJ)	1,000 Metric Tons of CO ₂ e Reduction ⁴	Economic Development ⁵ (\$millions)	Petroleum Displacement ⁶ (100,000 gpy)	Fuel Taxes ⁷ (\$100,000)	State & Local Taxes ⁸ (\$100,000)
2014	220	6,930	80	348	\$3,642	2,021	\$836	\$2,420
2015	220	6,930	65	620	\$3,642	2,021	\$836	\$2,420
2016	240	7,560	60	776	\$3,974	2,204	\$912	\$2,640
2017	265	8,348	55	966	\$4,387	2,434	\$1,007	\$2,915
2018	300	9,450	55	1,093	\$4,967	2,755	\$1,140	\$3,300
2019	350	11,025	50	1,420	\$5,795	3,215	\$1,330	\$3,850

