



Technical Report
NREL/TP-5400-61926
May 2014

Stationary Fuel Cell System Composite Data Products

Data through Quarter 4 of 2013

G. Saur, J. Kurtz, C. Ainscough, and M. Peters

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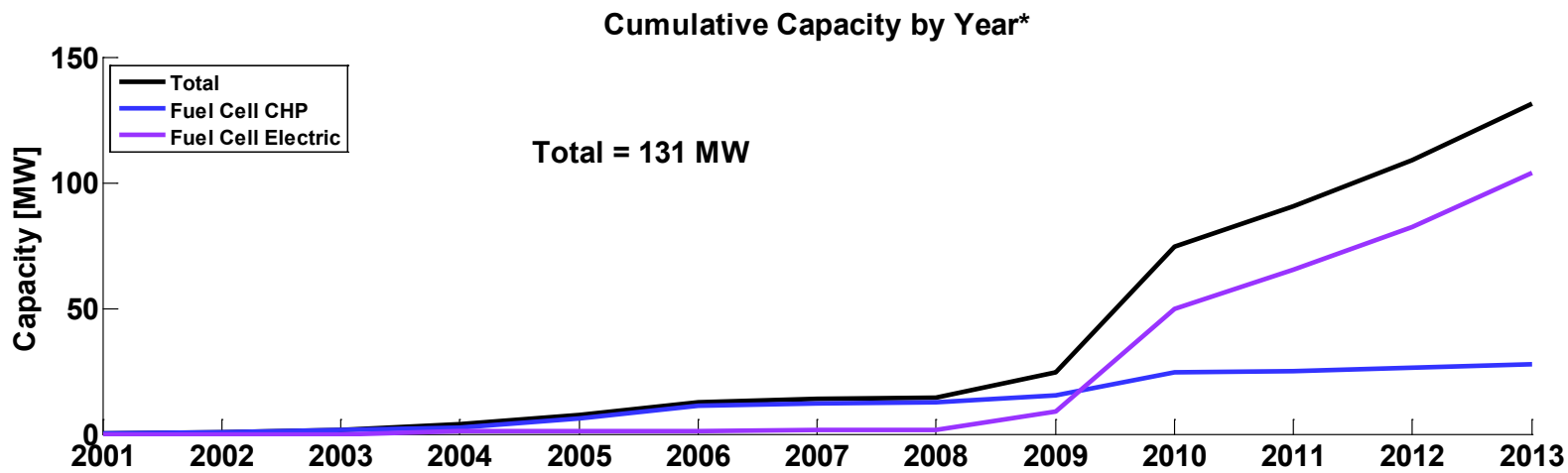
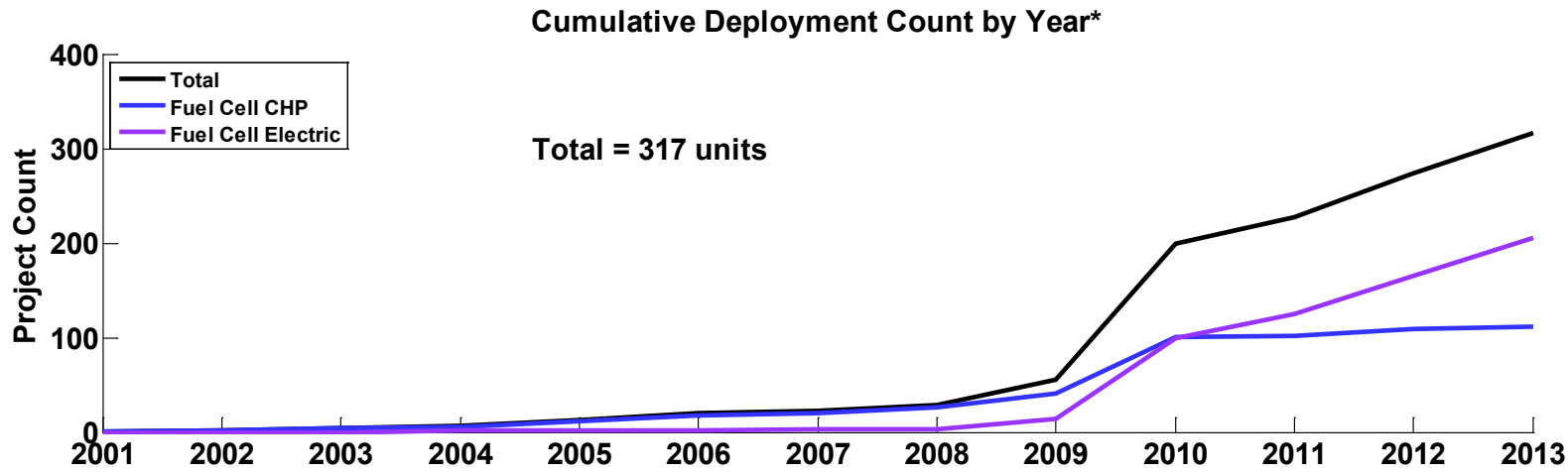
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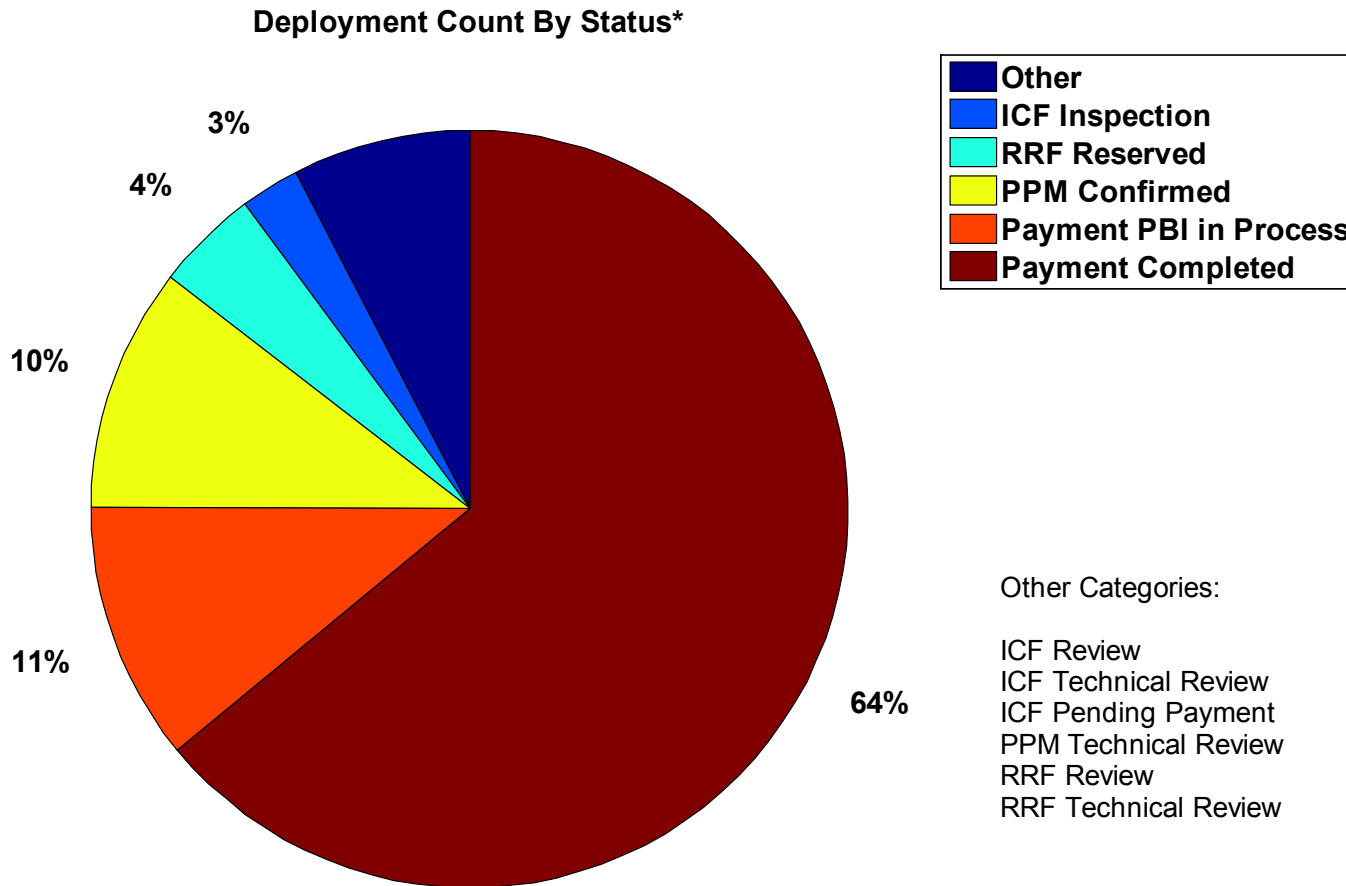


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Fuel Cell Stationary Systems Deployed by Year



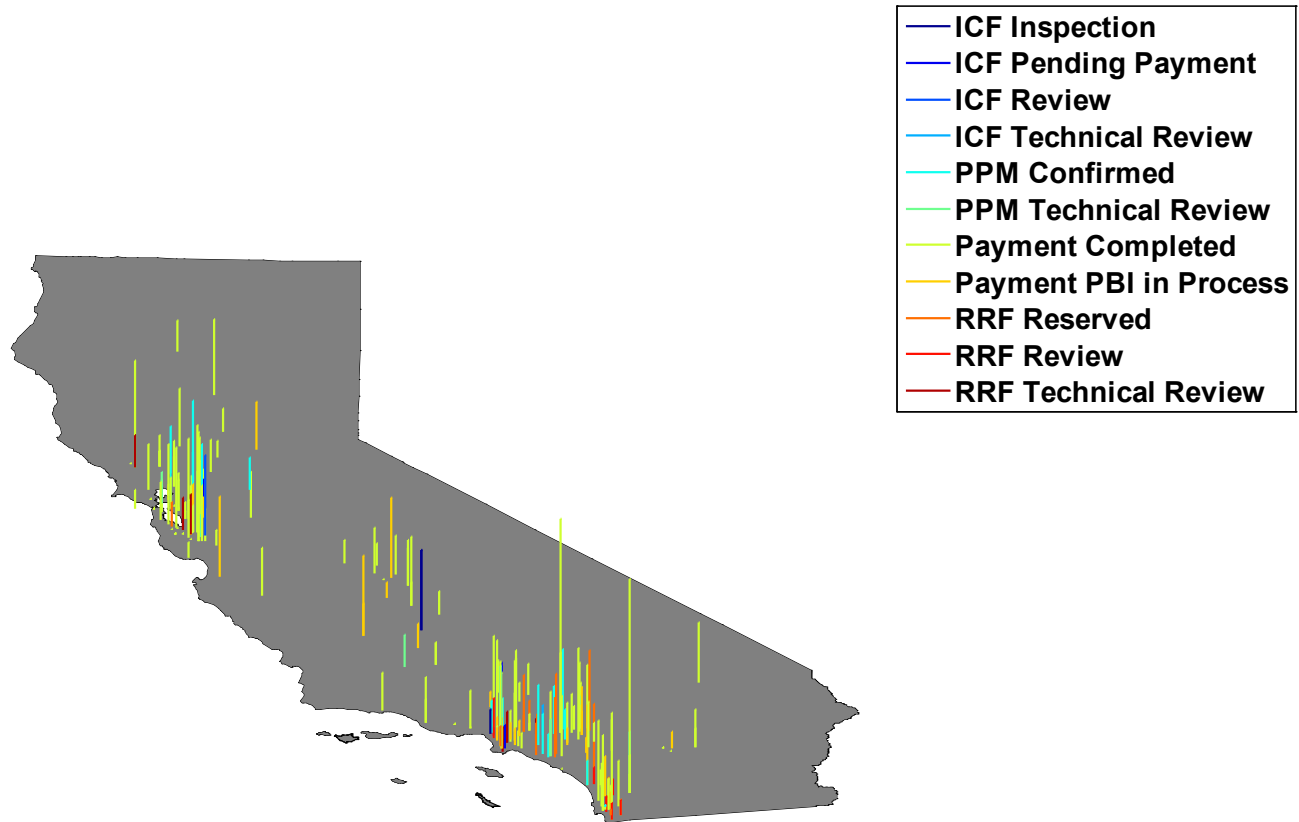
Stationary Fuel Cell System Count by Status



Definitions: RRF = Reservation Request Form, is the first step in the SGIP incentive claim process.
PPM = Proof of Project Milestone; the applicant must prove progress and commitment to the project.
ICF = Incentive Claim Form is the step where the applicant, after meeting all SGIP requirements requests payment of the incentive.
PBI = Performance Based Incentive is the way in which the incentive is paid out over time based on performance of the system.

Location of Stationary Fuel Cell Systems Analyzed

CA Stationary Fuel Cell Installations* (2001 - 2013)



NREL cdp_stat_03

Created: Apr-29-14 2:08 PM | Data Range: 2001Q2-2013Q4

Definitions: RRF = Reservation Request Form, is the first step in the SGIP incentive claim process.

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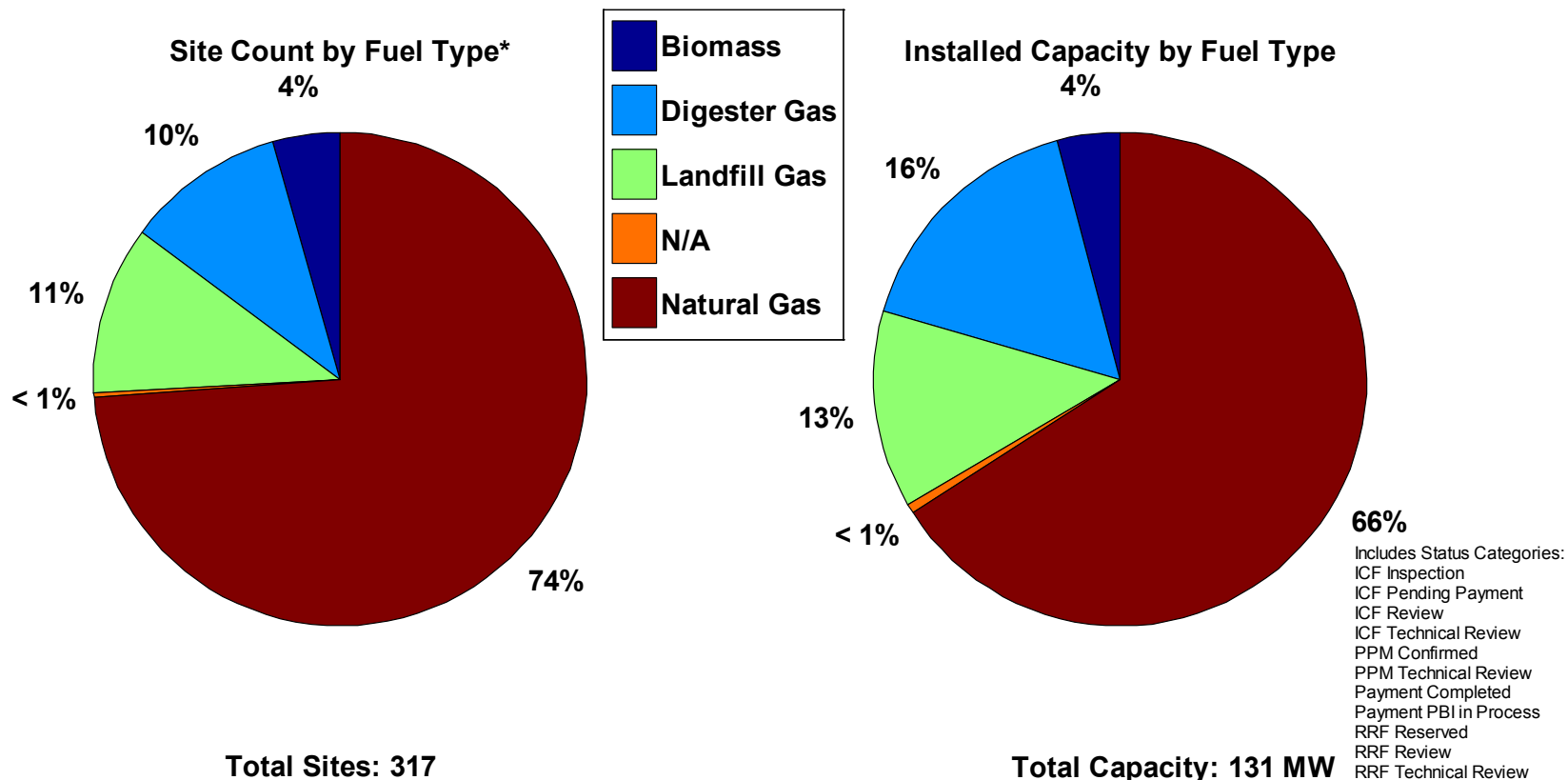
ICF = Incentive Claim Form is the step where the applicant, after meeting all SGIP requirements requests payment of the incentive.

PBI = Performance Based Incentive is the way in which the incentive is paid out over time based on performance of the system.

*Data from the California SGIP.

Stationary Fuel Cell System Count and Capacity by Fuel Type

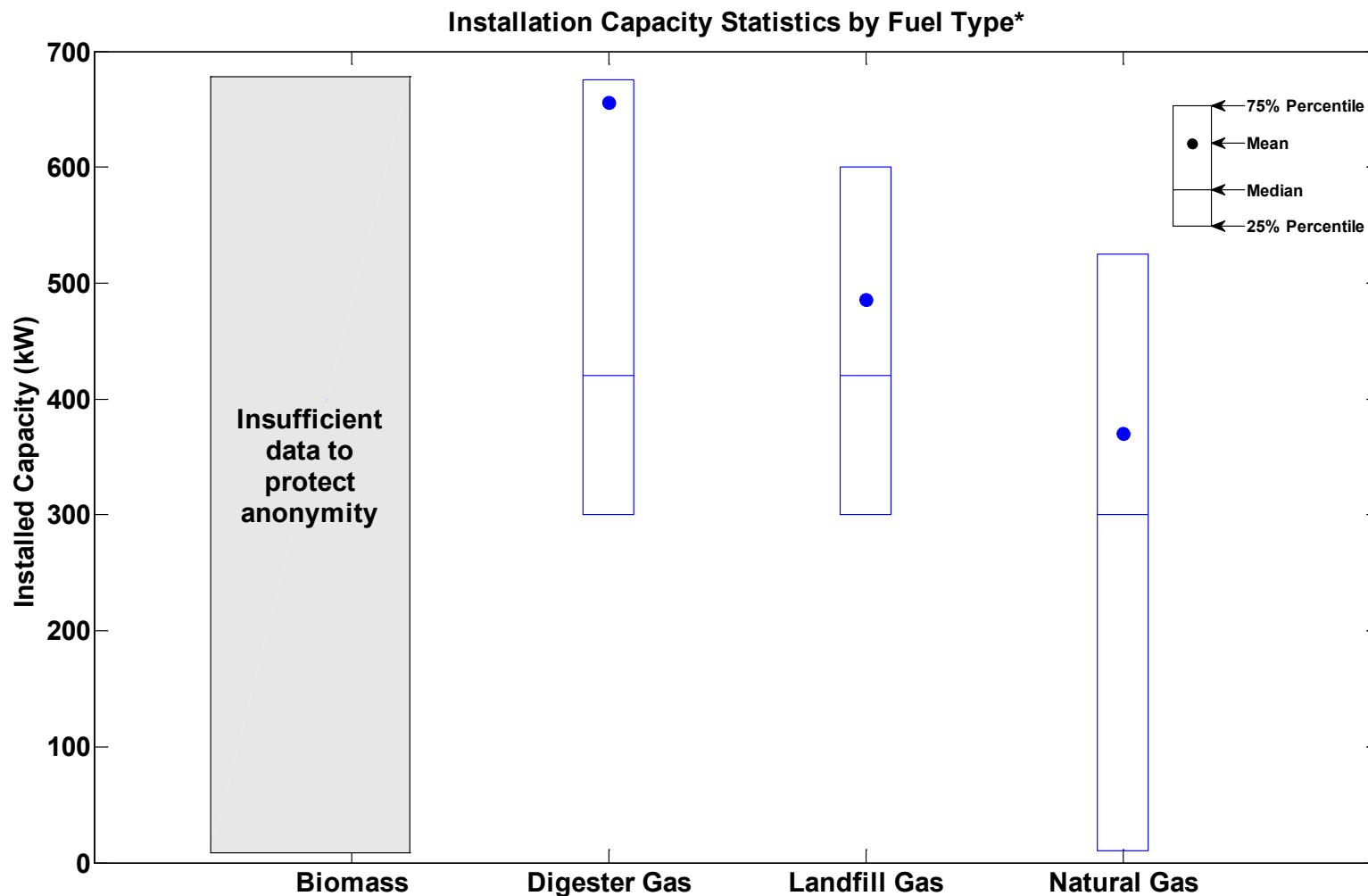
Installations by Fuel Type
(All Fuel Cell Systems)



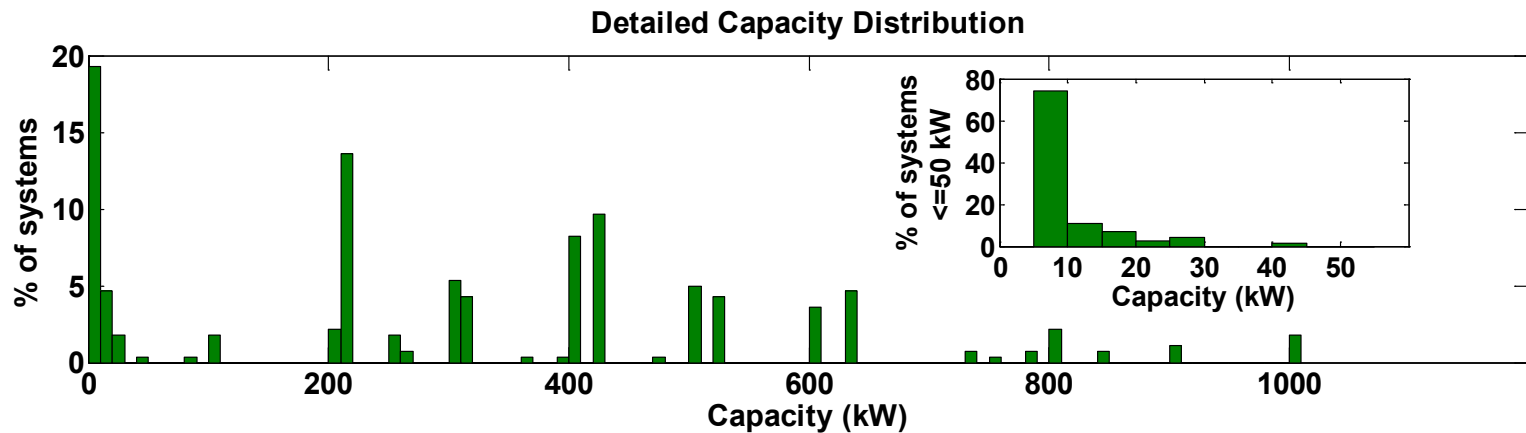
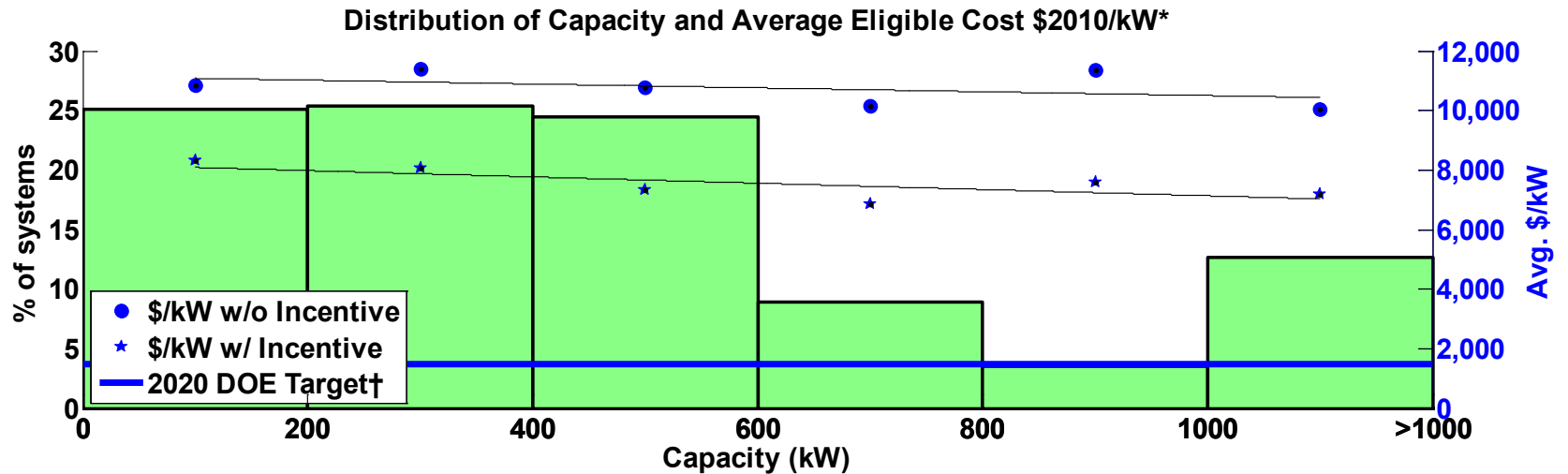
Definitions: RRF = Reservation Request Form, is the first step in the SGIP incentive claim process.
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Fuel Type Capacity



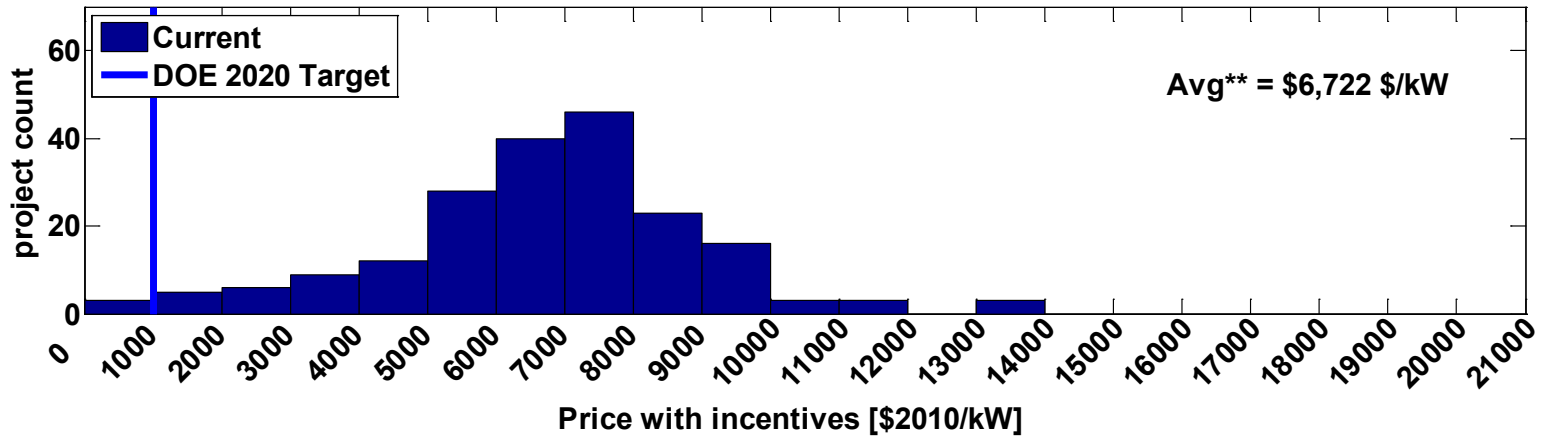
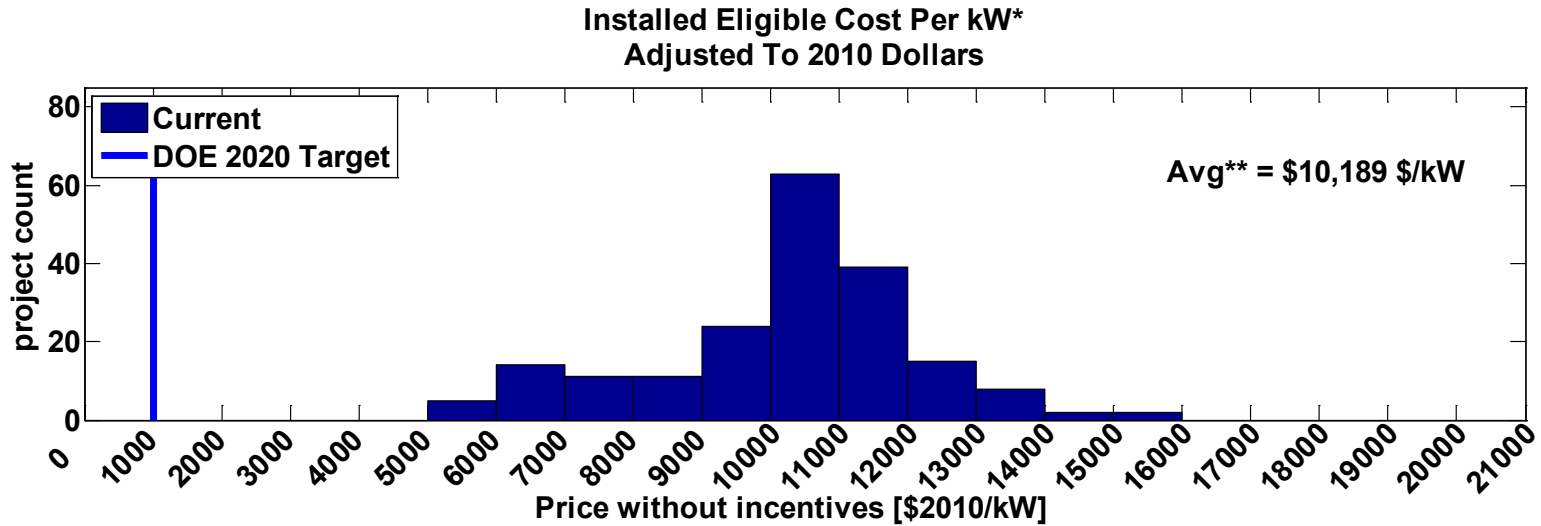
Fuel Cell Stationary Capacity and Average Prices



Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

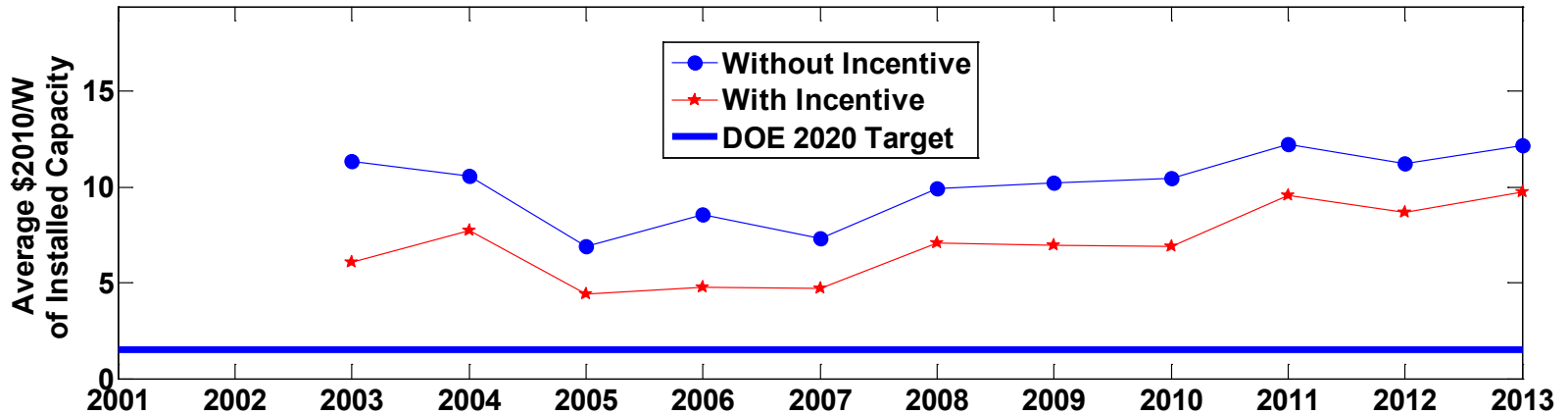
†for the year 2020, operating on natural gas.
 *Data from the California SGIP.

Distribution of Stationary Fuel Cell Install Price With and Without Incentives

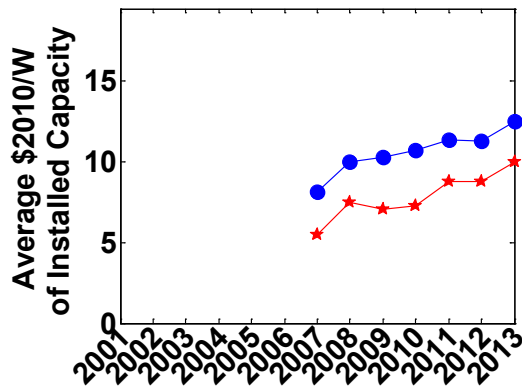


Stationary Fuel Cell Install Price Over Time With and Without Incentives

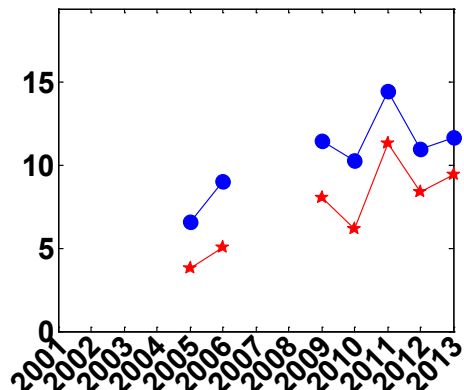
Average Eligible Cost \$2010/W Trend for Overall Deployments*



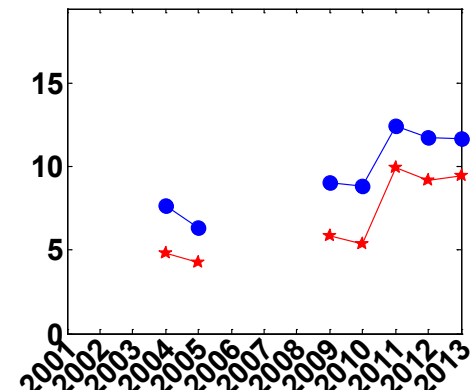
Capacity < 500 kW



500 kW <= Capacity < 1000 kW



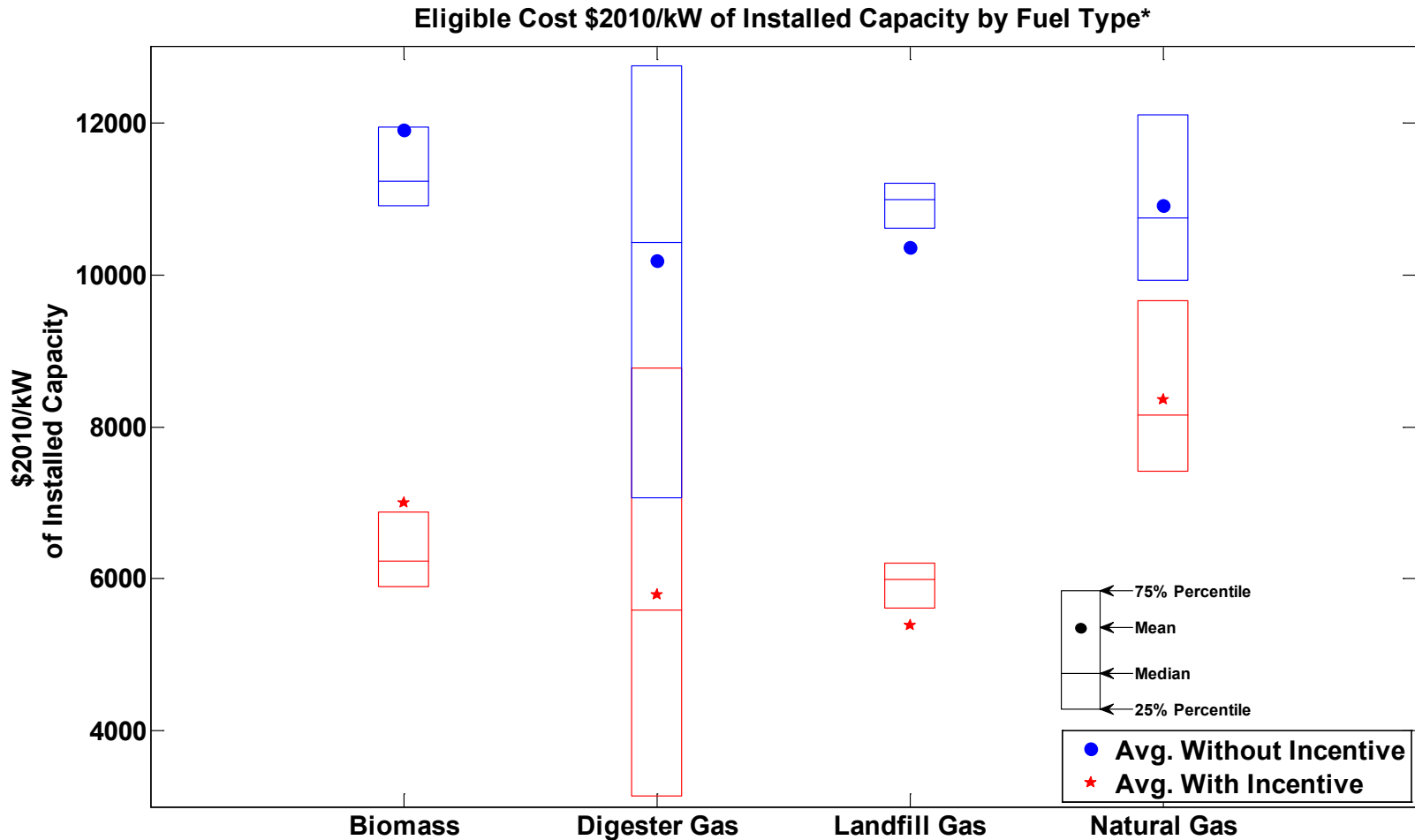
Capacity >= 1000 kW



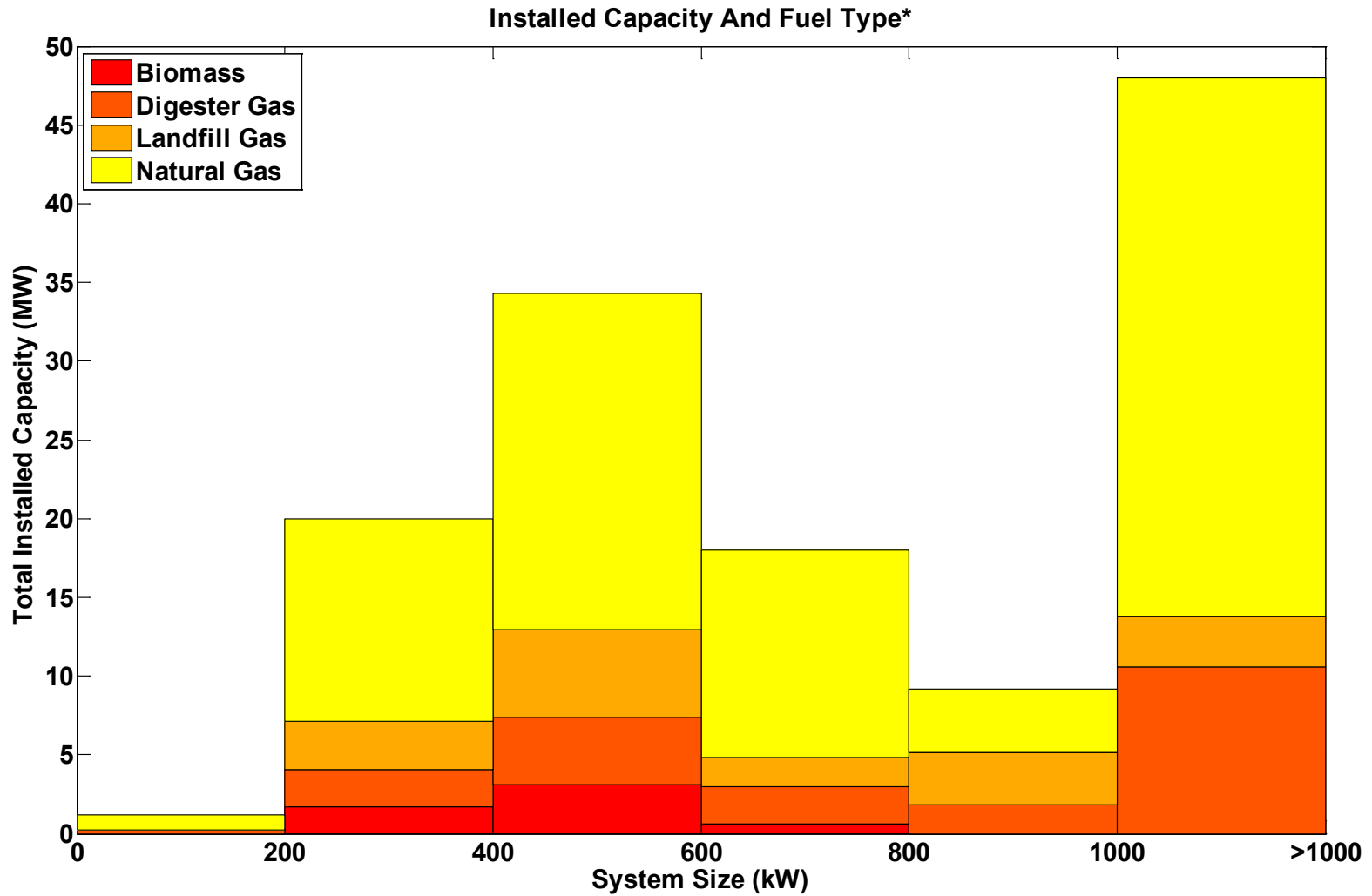
Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

*Data from the California SGIP.

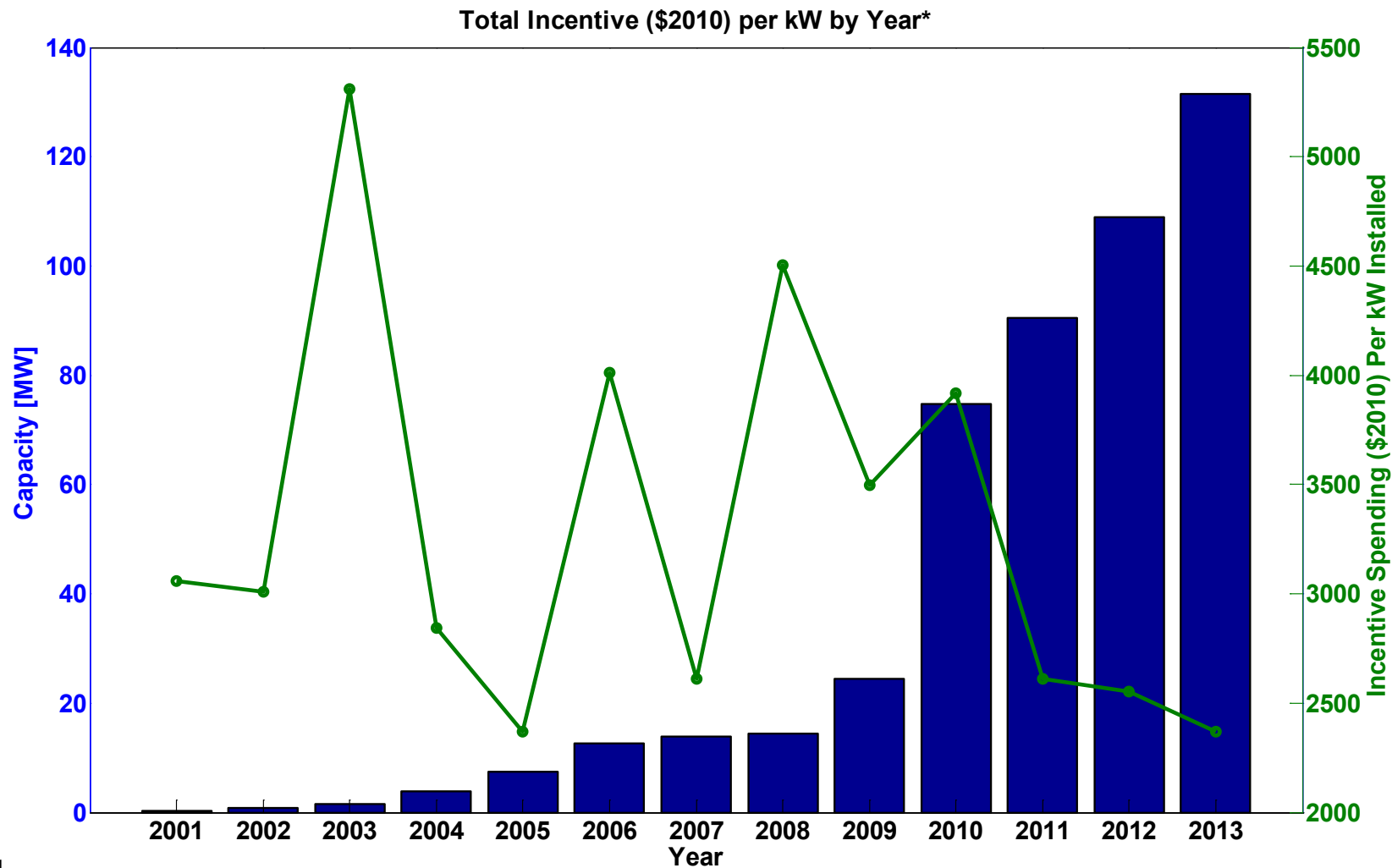
Stationary Fuel Cell Install Price by Fuel Type With and Without Incentives



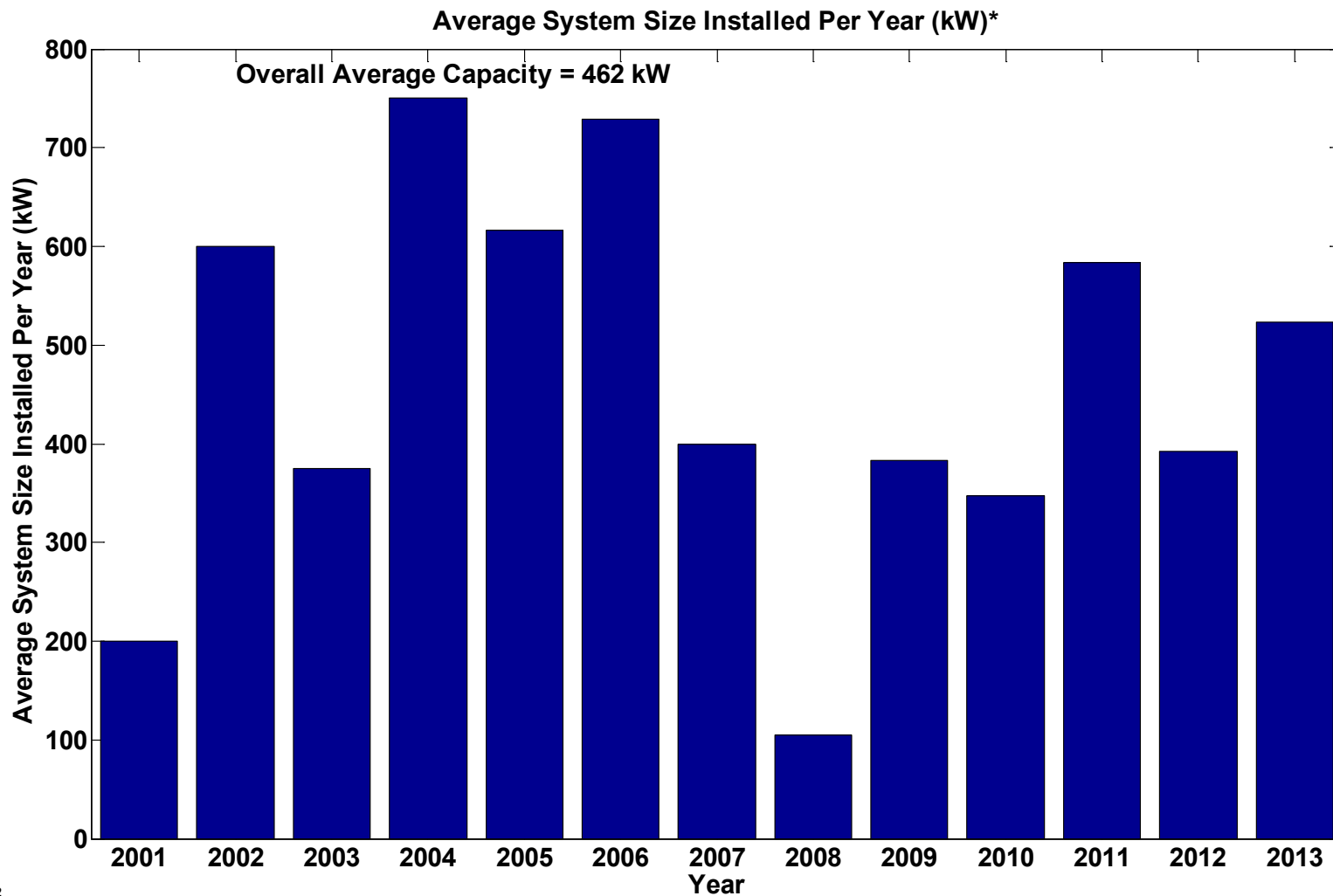
Installed Capacity and Fuel Type



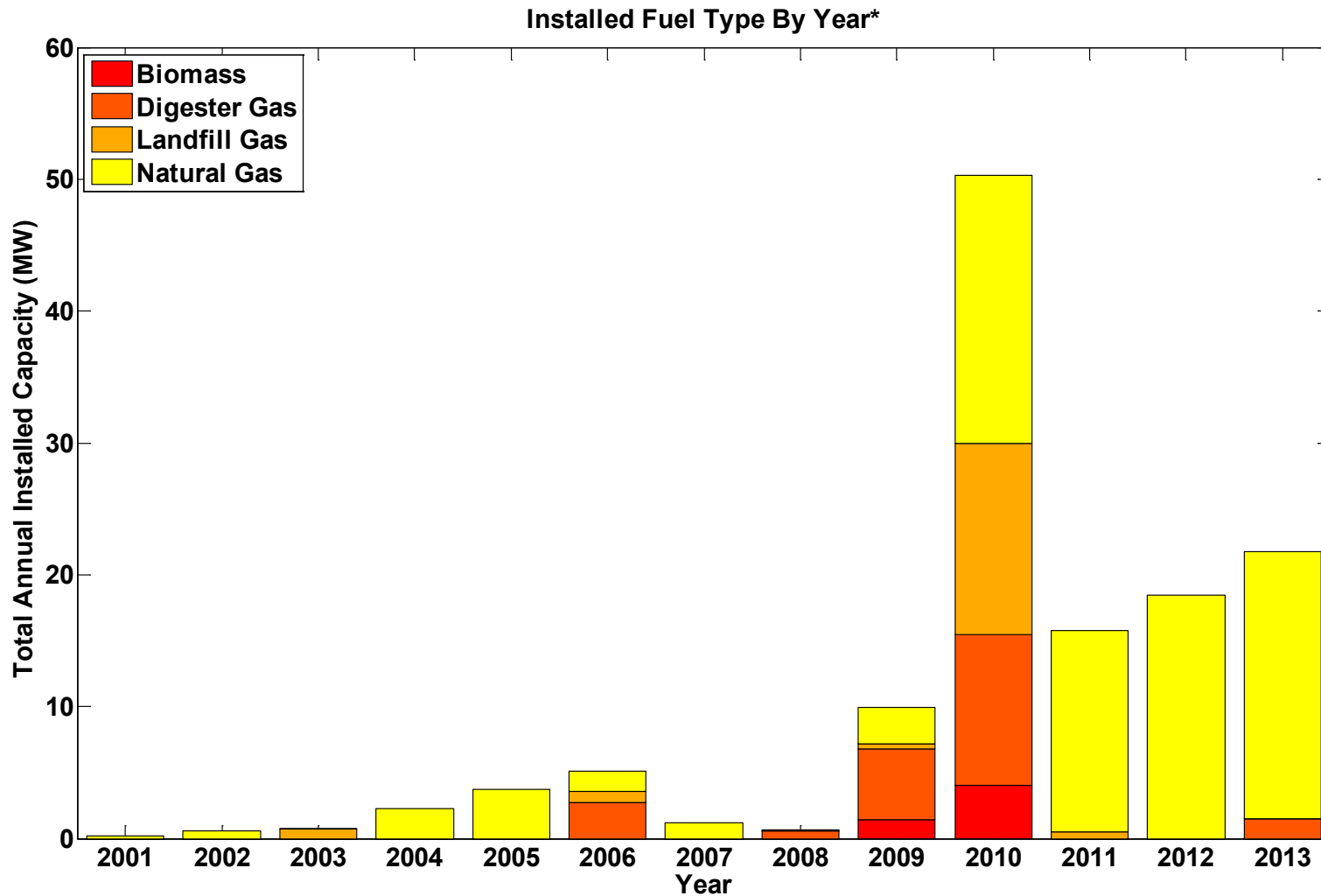
Total Incentive Spending (\$2010) per kW by Year



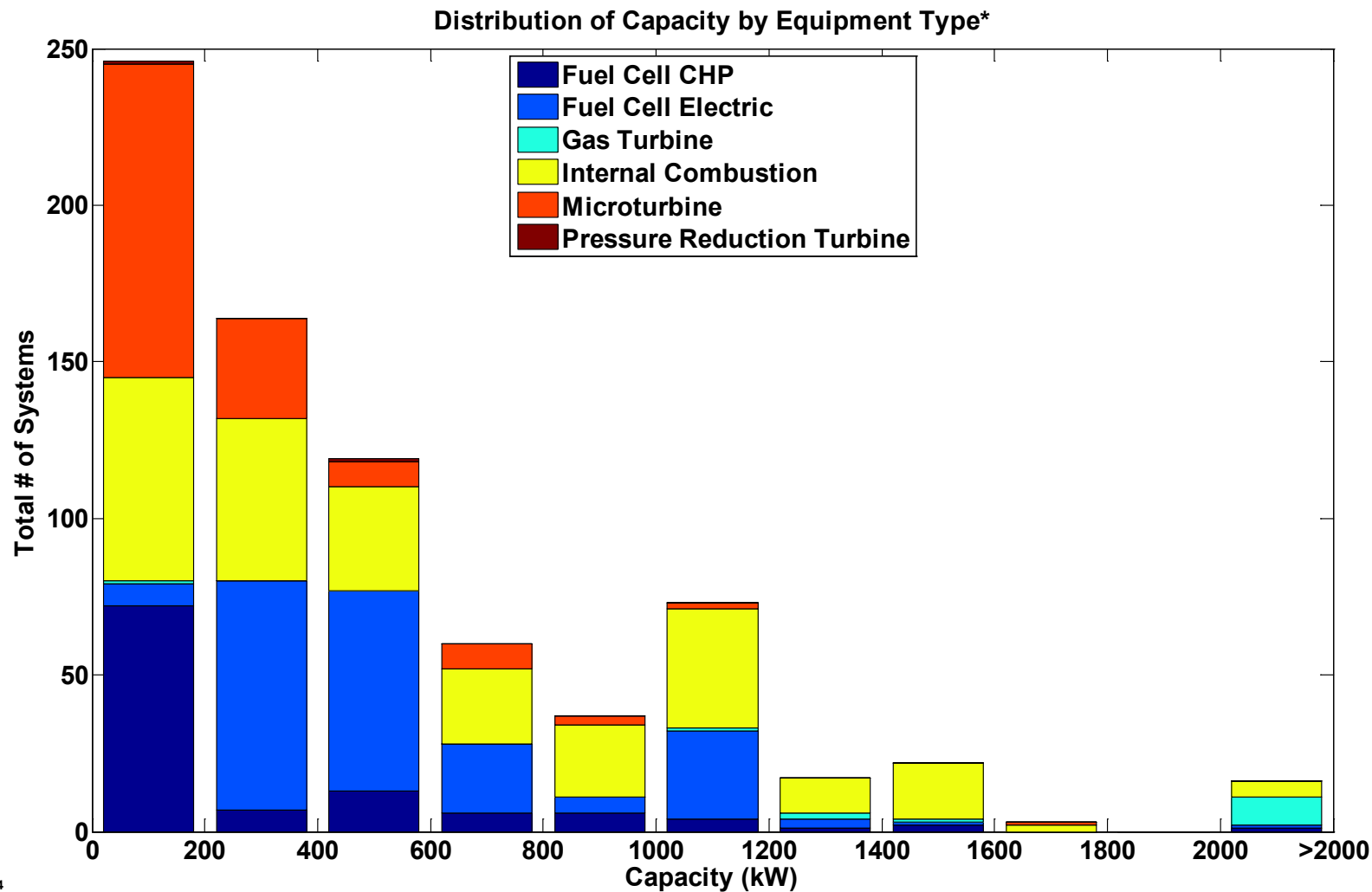
Average System Size Installed Per Year (kW)



Installed Annual Capacity by Fuel Type

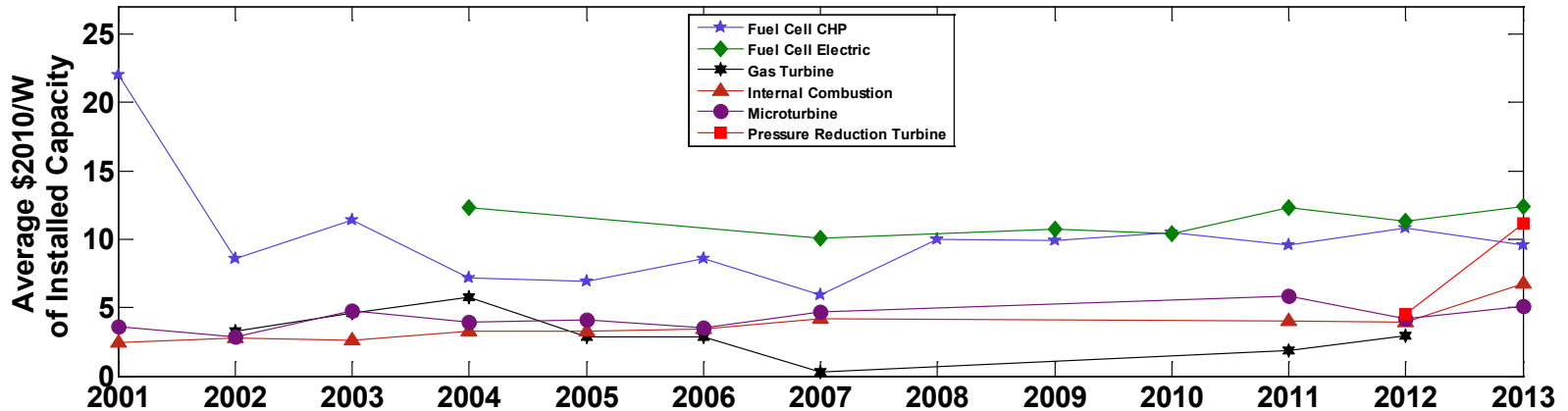


Distribution of Capacity by Equipment Type

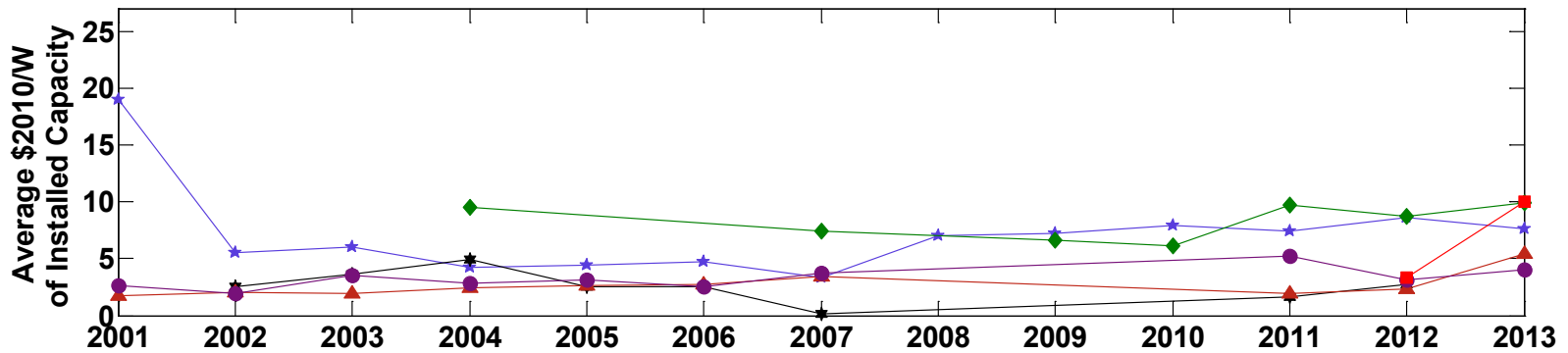


Average Eligible Cost by Equipment Type, Including Other DG

Average Eligible Cost \$2010/W Trend for Overall Deployments*
Without Incentives



Average Eligible Cost \$2010/W Trend for Overall Deployments*
With Incentives

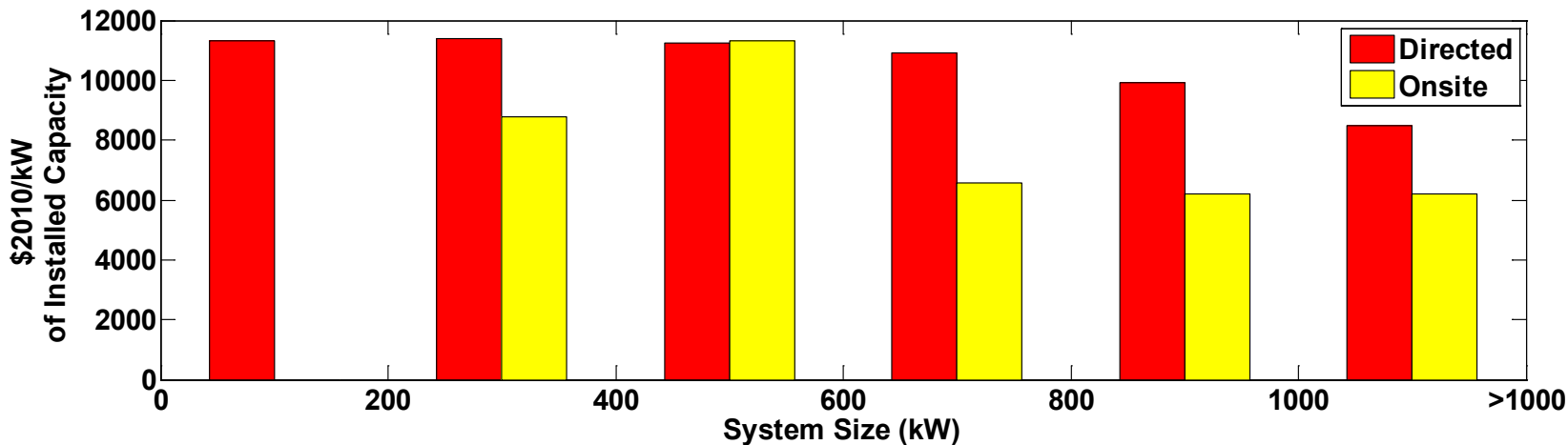


Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

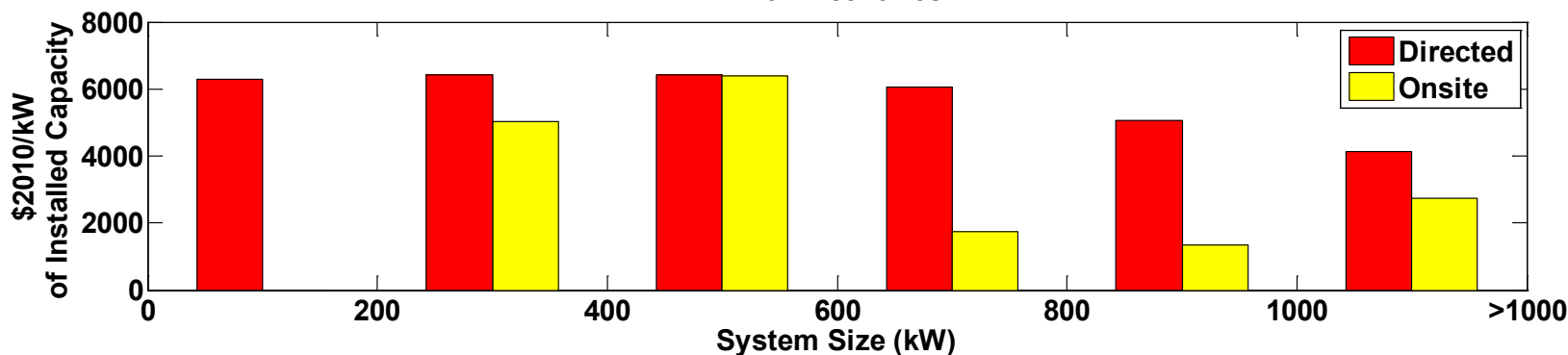
*Data from the California SGIP.

Average Eligible Cost for Biogas Sources

Average Eligible Cost \$2010/kW Biogas Source*
Without Incentives



Average Eligible Cost \$2010/kW Biogas Source*
With Incentives

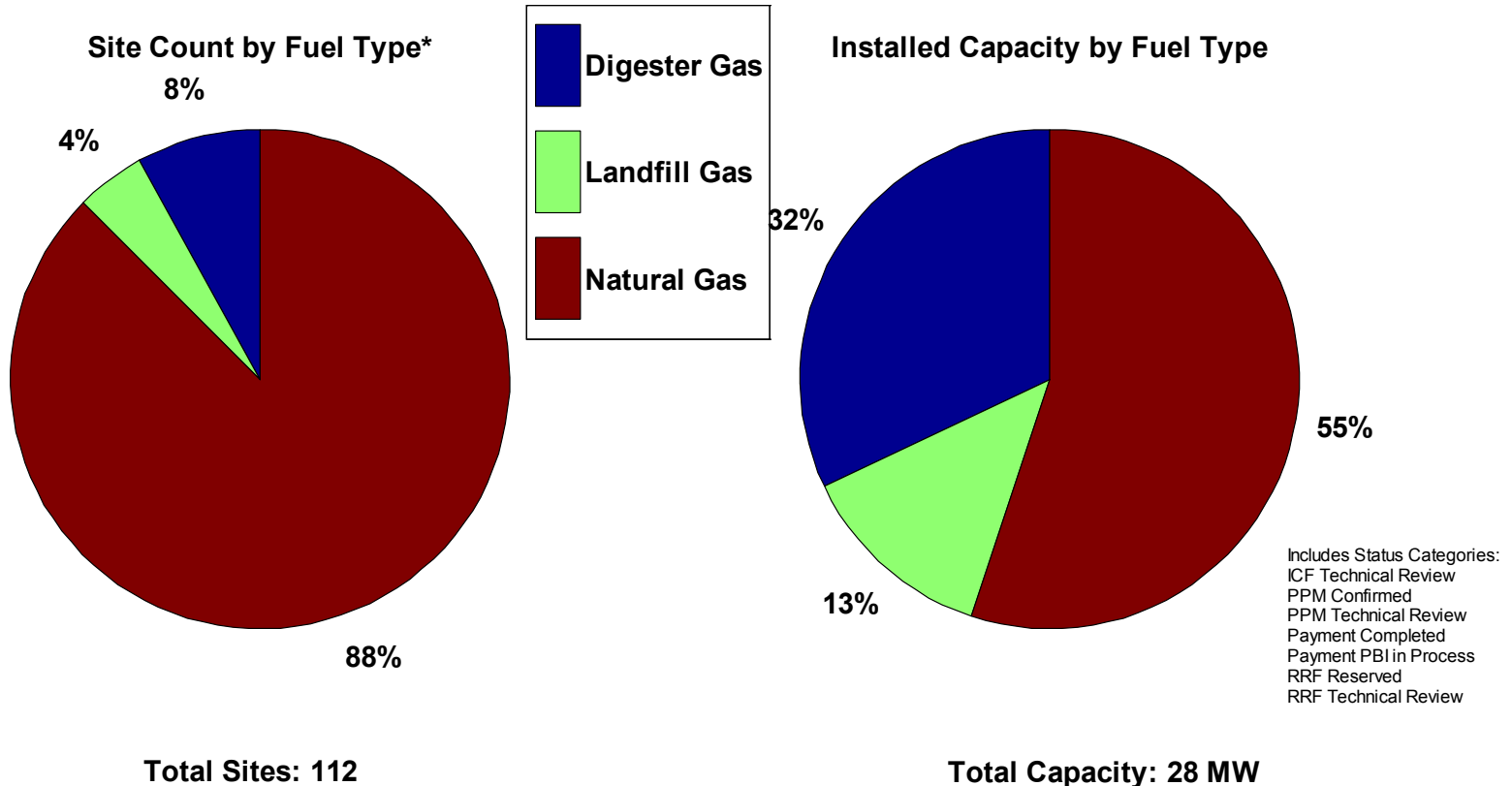


Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

*Data from the California SGIP.

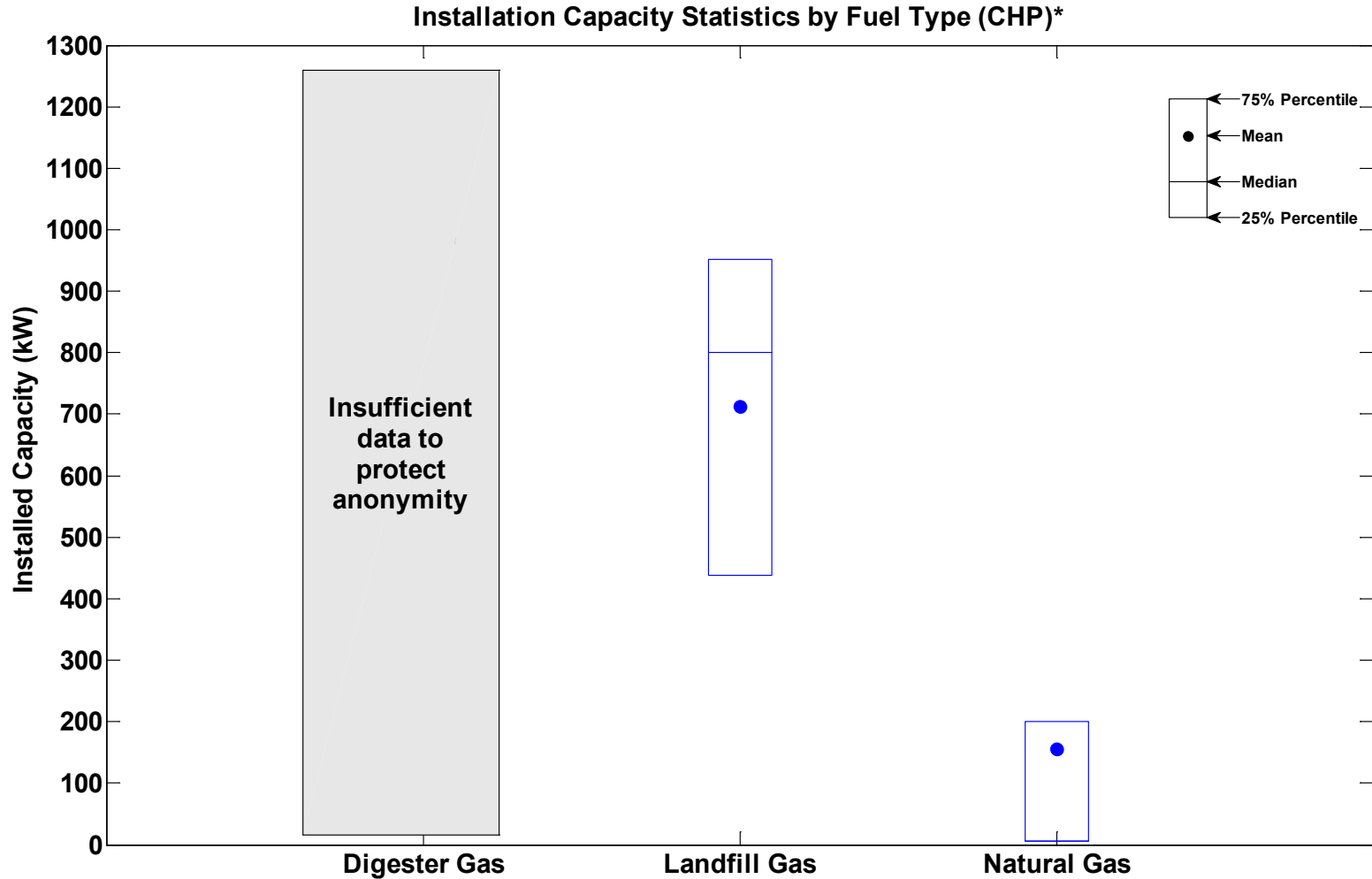
Installations By Fuel Type (CHP Fuel Cells)

Installations by Fuel Type
(CHP Fuel Cell Systems)

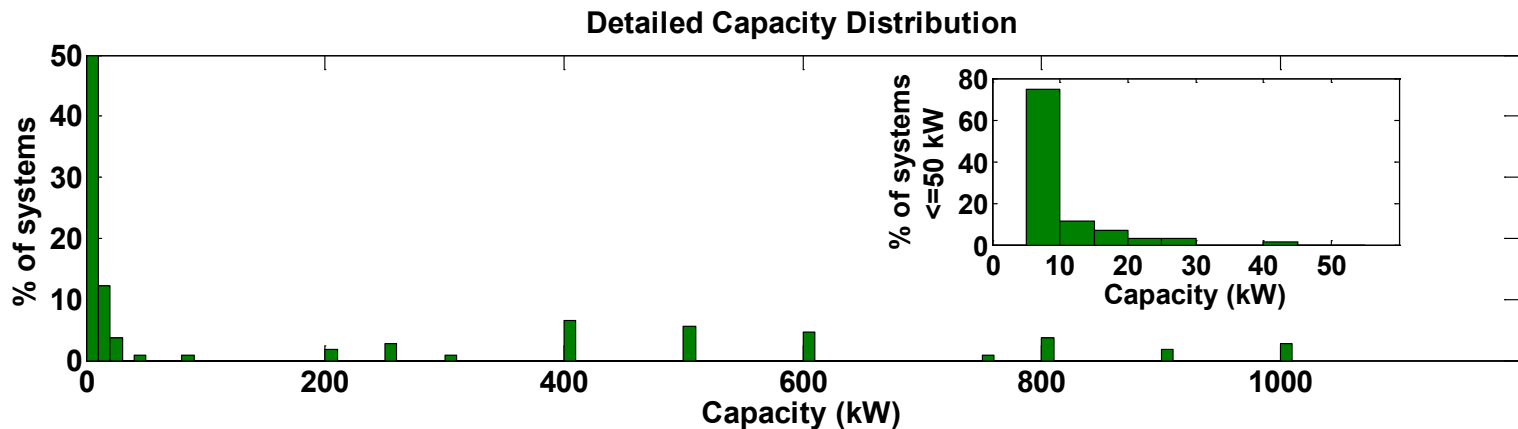
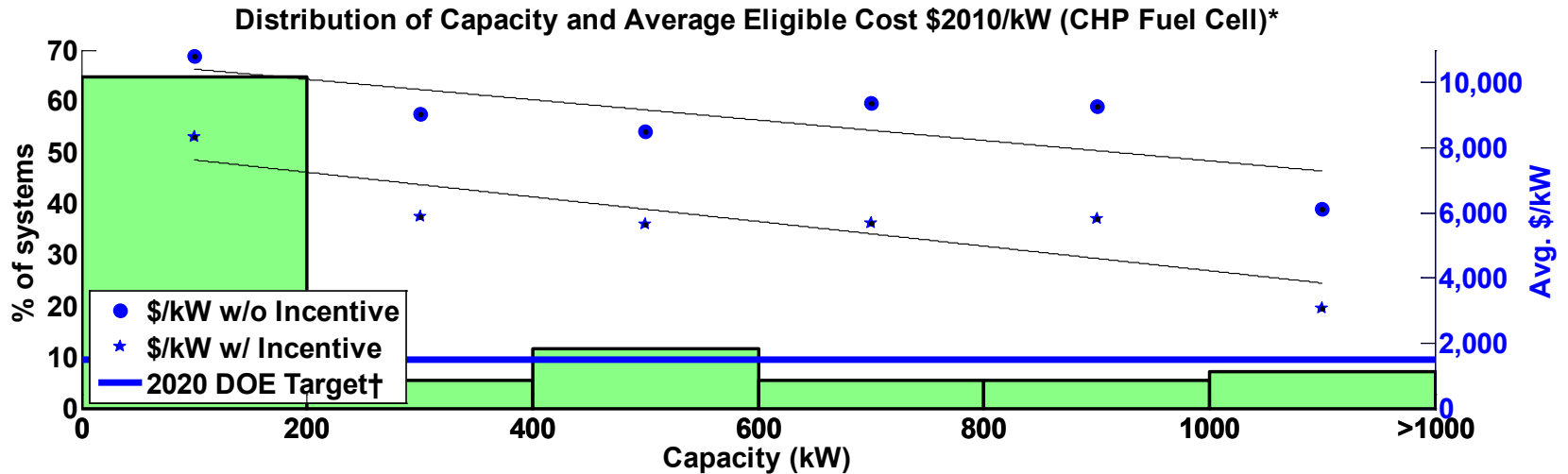


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Installation Capacity by Fuel Type (CHP Fuel Cells)



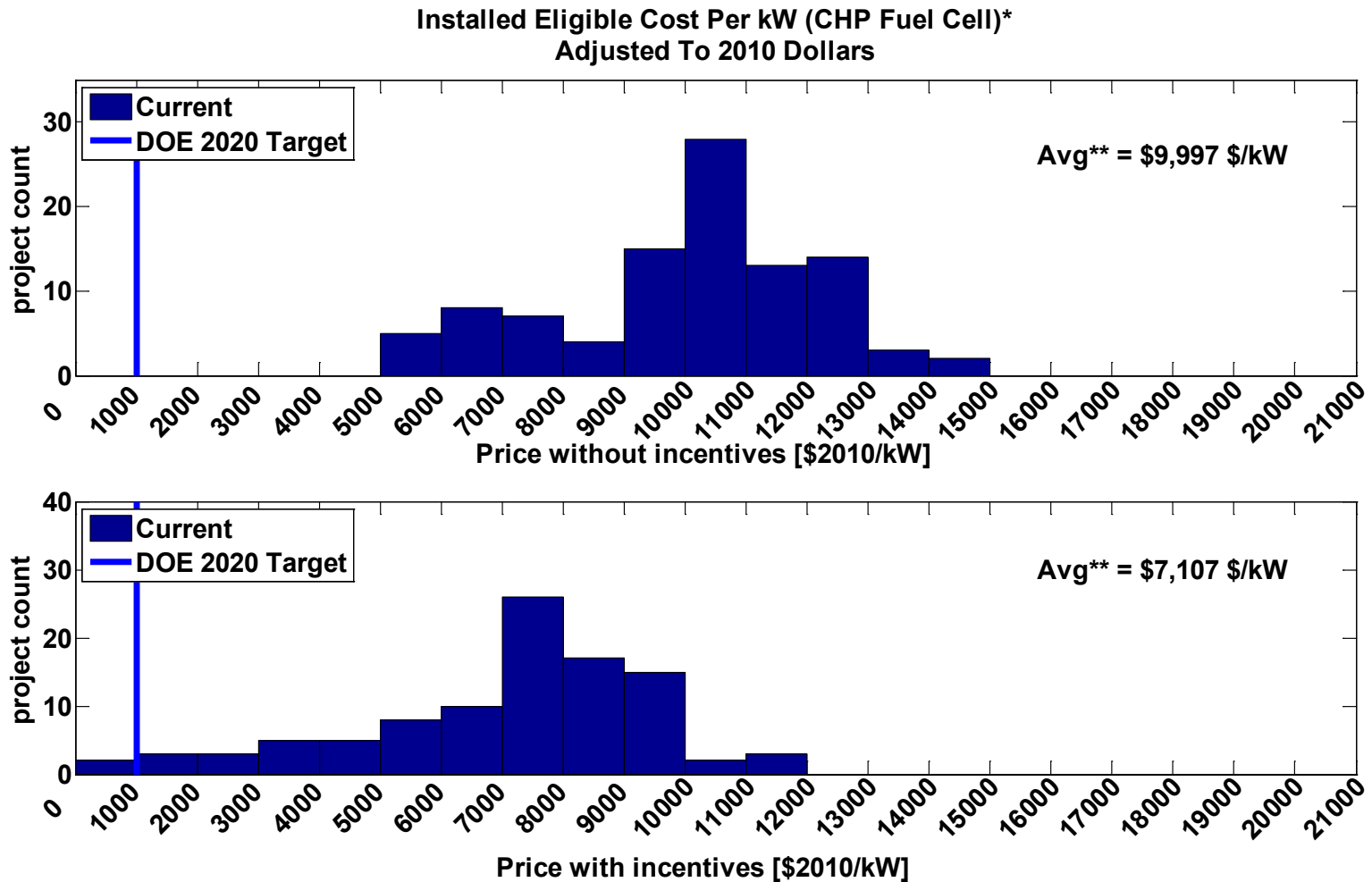
Distribution of Capacity and Eligible Cost (CHP Fuel Cells)



Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

†for the year 2020, operating on natural gas.
*Data from the California SGIP.

Distribution of Eligible Cost With and Without Incentives (CHP Fuel Cells)

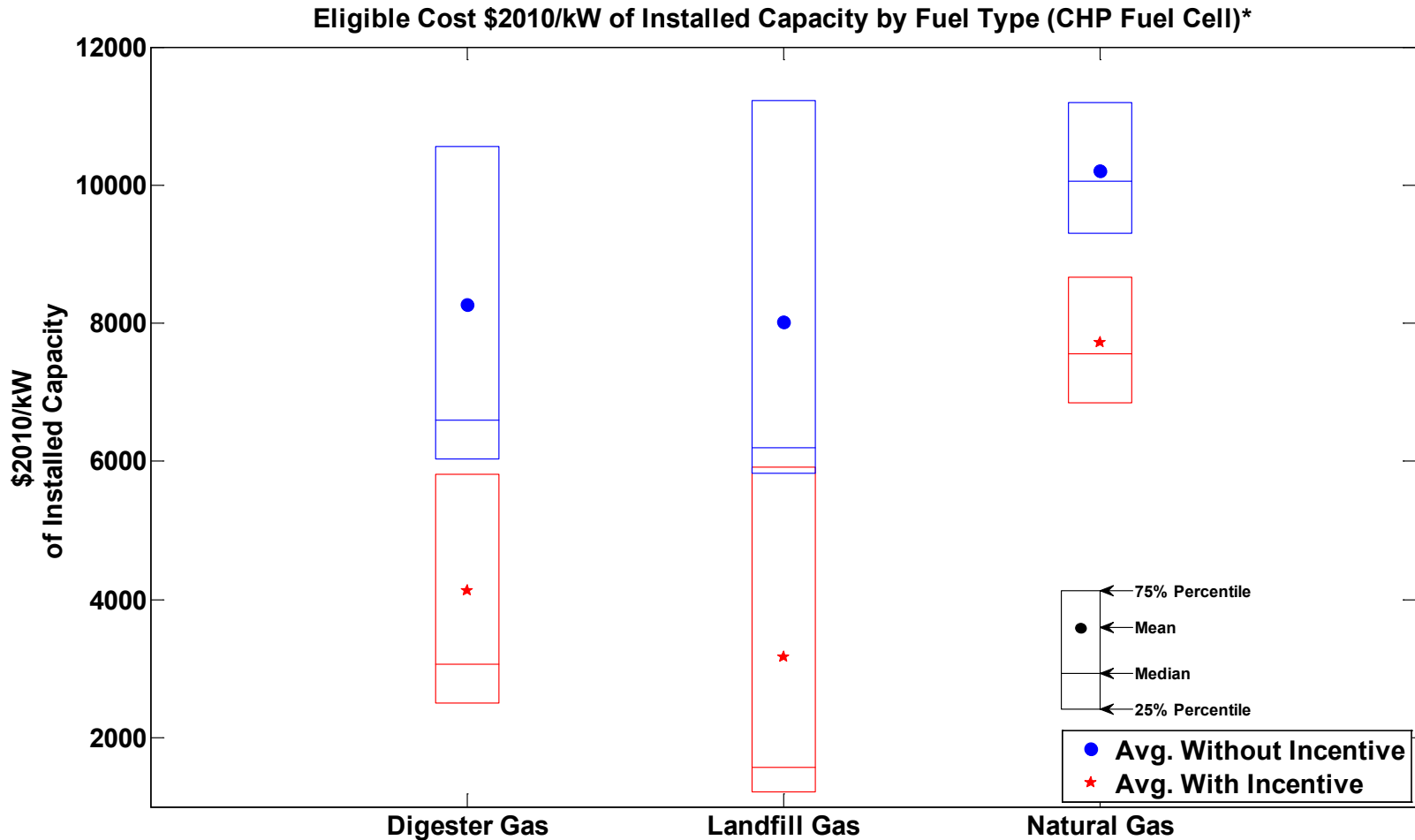


Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

**Data points with less than 2 projects filtered.
*Data from the California SGIP.

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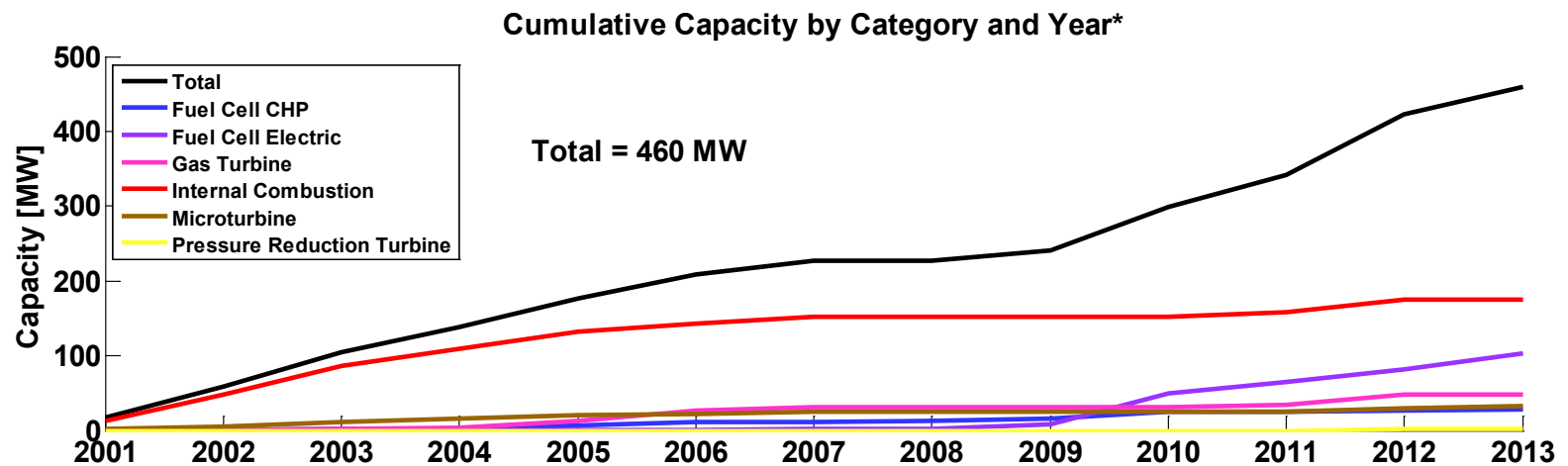
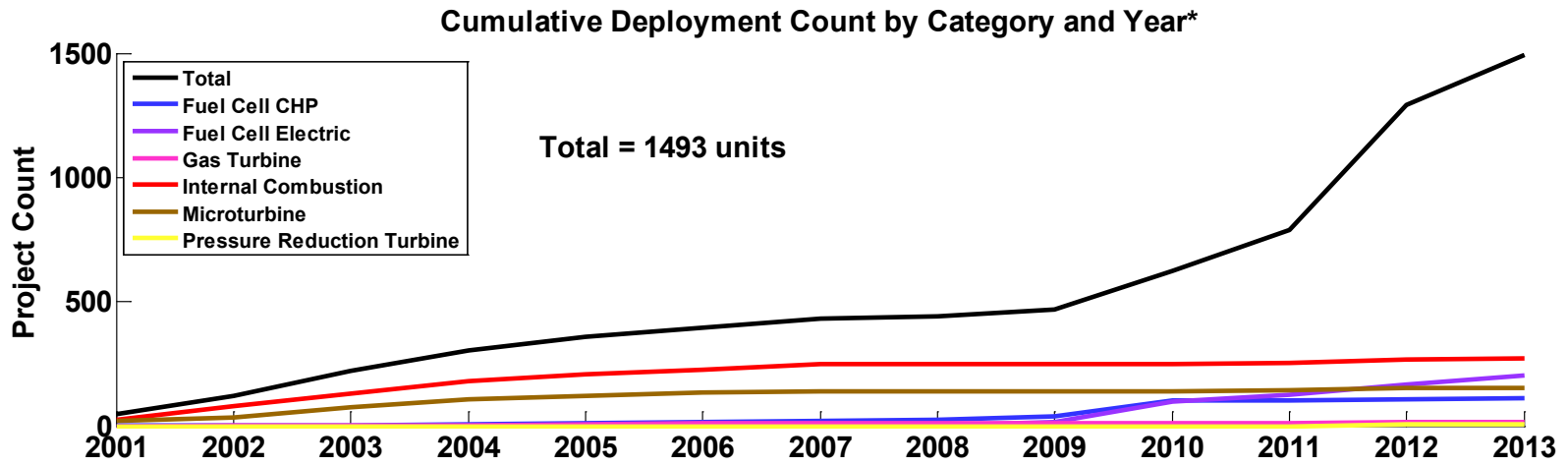
Eligible Cost By Fuel Type With and Without Incentives (CHP Fuel Cells)



Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

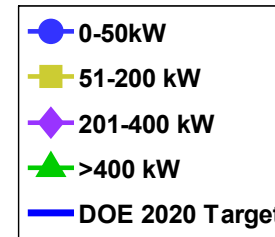
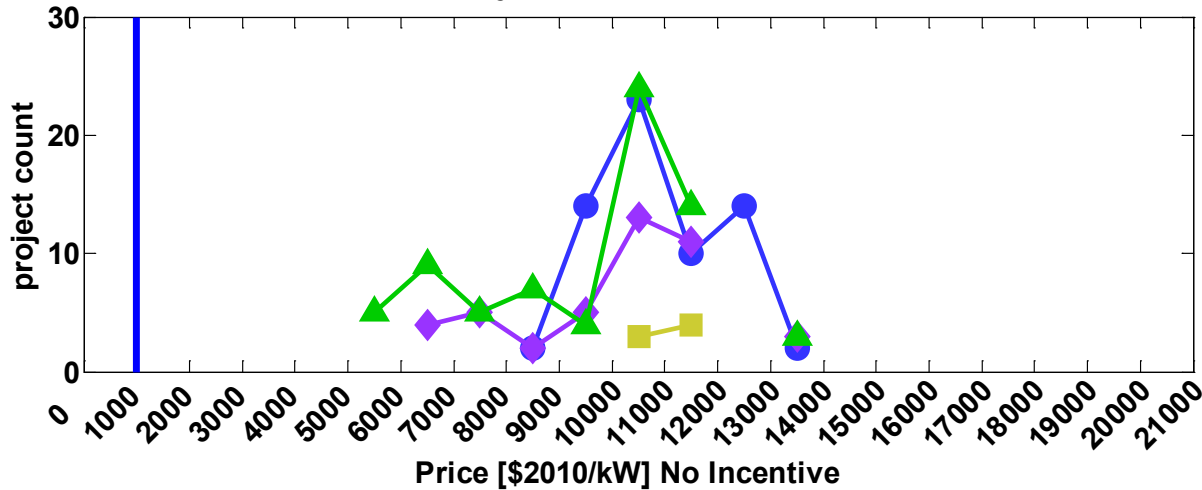
*Data from the California SGIP.

Cumulative Deployment Count by Category and Year



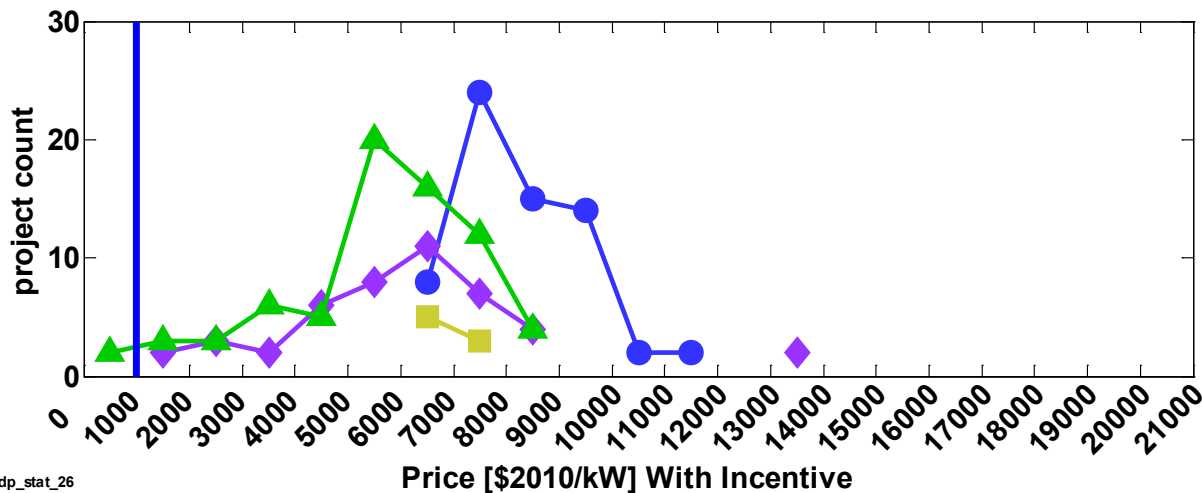
Installed Eligible Cost per kW By Capacity

Installed Eligible Cost Per kW By Capacity*
Adjusted To 2010 Dollars



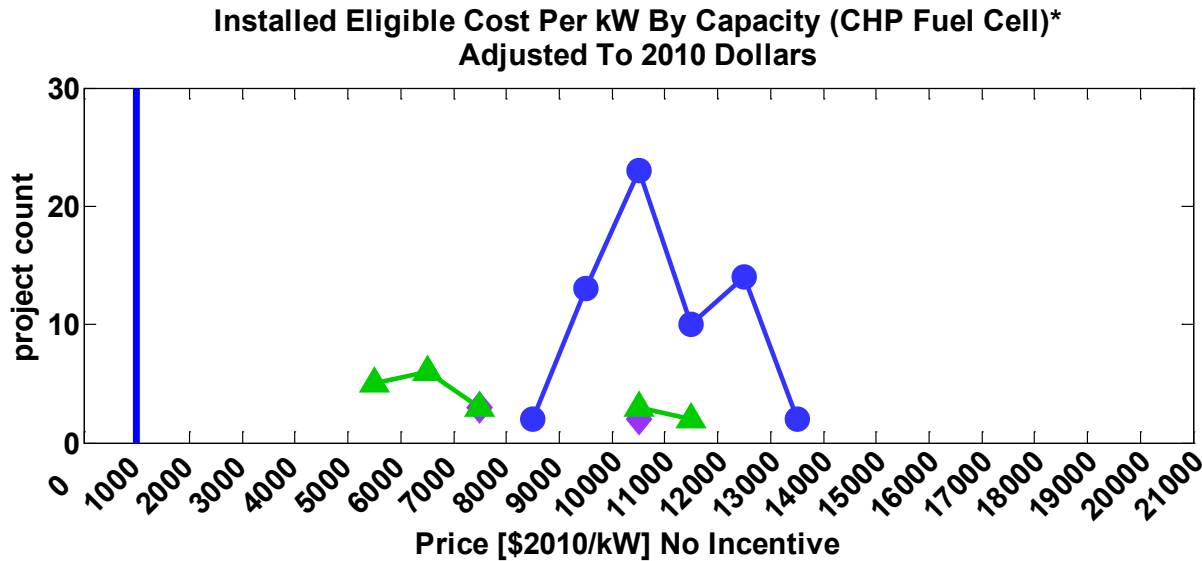
Average Prices No Incentive, Incentive

0-50 kW = \$10,808/kW, \$8,299/kW
 51-200 kW = \$10,932/kW, \$6,725/kW
 201-400 kW = \$9,950/kW, \$6,046/kW
 401+ kW = \$9,524/kW, \$5,587/kW
 Data points with less than 2 projects filtered.

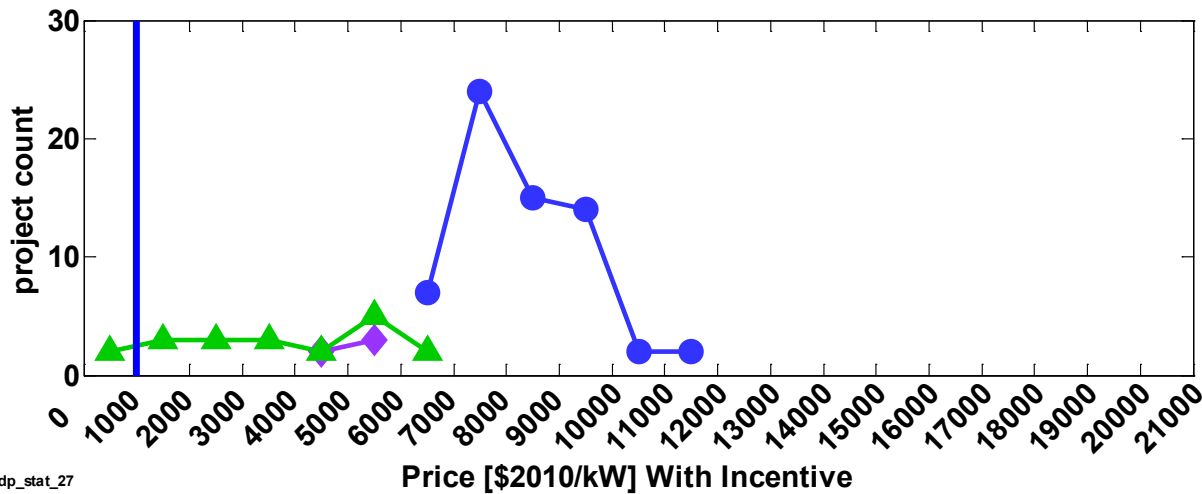


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Installed Eligible Cost per kW By Capacity (CHP Fuel Cell)



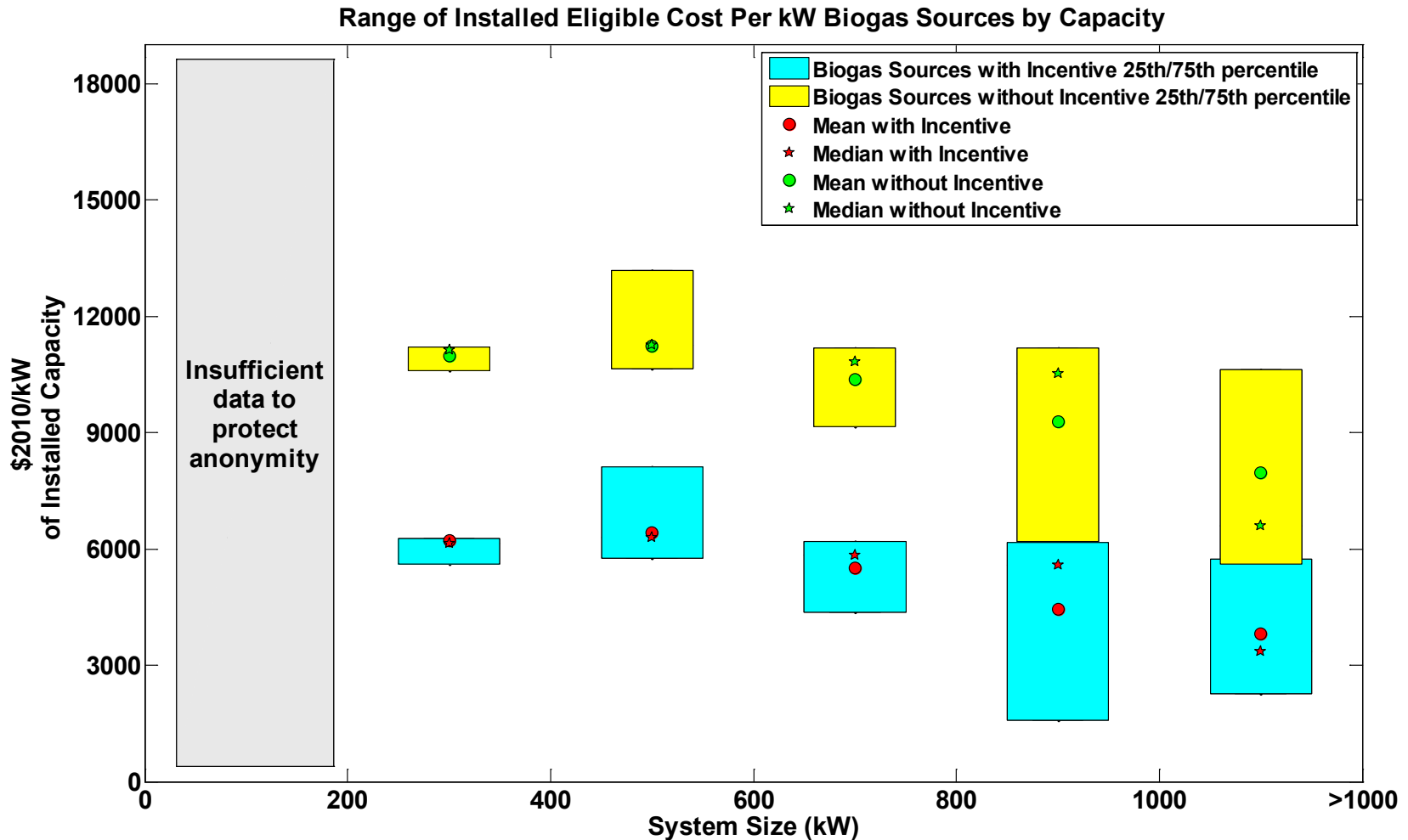
Average Prices No Incentive, Incentive
 0-50 kW = \$10,830/kW, \$8,320/kW
 51-200 kW = \$NaN/kW, \$NaN/kW
 201-400 kW = \$8,817/kW, \$5,330/kW
 401+ kW = \$7,582/kW, \$3,647/kW
 Data points with less than 2 projects filtered.



Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

CDP-STAT-28

Range of Installed Eligible Cost per kW Biogas Sources by Capacity



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Eligible Costs May Include: Planning & Feasibility Study, Engineering & Design, Permitting, Self-Generation Equipment, Waste Heat Recovery Costs, Construction & Installation Costs, Gas & Electric Interconnection, Warranty, Maintenance Contract, Metering, Monitoring & Data Acquisition System, Emission Control Equipment Capital, Gasline Installation, Fuel Gas Clean-up Equipment, Electricity Storage Devices, Bond to Certify Renewable Fuel, Sales Tax, Fuel Supply (digesters, gas gathering, etc.), Thermal Load, & Other Eligible Costs

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