

CCE TECHNICAL STUDY FOR CONTRA COSTA COUNTY DECEMBER 12, 2016

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MAIN FINDINGS

- Contra Costa County has several options for implementing a Community Choice Energy (CCE) program that would result in:
 - lower GHG emissions
 - increased local renewable energy generation
 - increased local job creation
- The electricity rates under various CCE scenarios would be similar or less than the PG&E rates.
- Enough technically feasible locations for renewable generation to meet a significant proportion of electricity demand (40% of these sites in Northern Waterfront).
- There are tradeoffs between forming a Contra Costa-only CCE versus existing/ongoing CCE efforts in neighboring counties

THIS STUDY

- CCE Options
 - Stand-alone Contra Costa CCE
 - Join MCE Clean Energy
 - Join with Alameda County CCE (East Bay Community Energy)
 - No action (remain with “bundled” PG&E service)

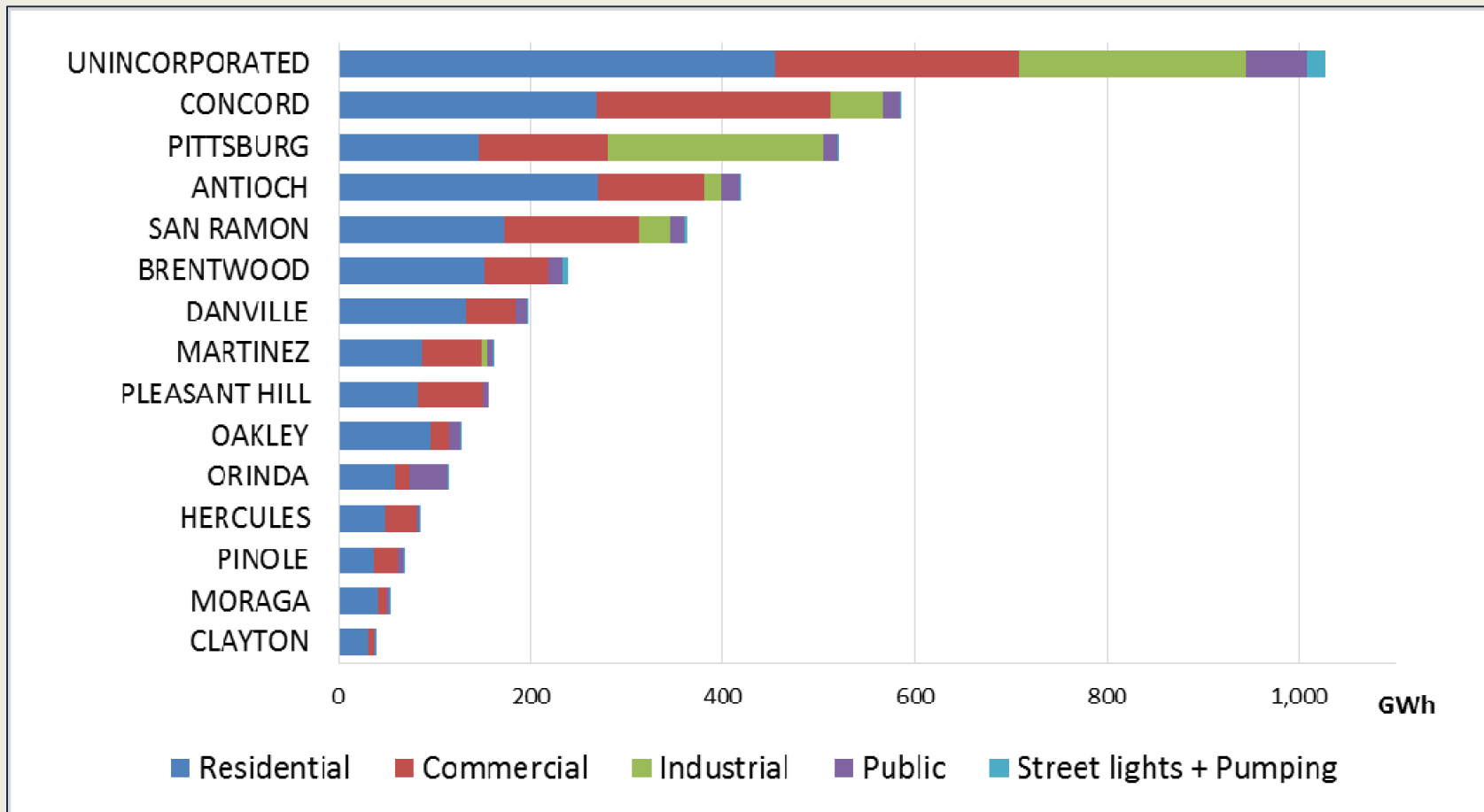
- Technical analysis of the option for a Contra Costa CCE
 - Potential Rates versus PG&E
 - Greenhouse gas emissions
 - Local solar potential
 - Local job development

CONTRA COSTA CCE OPTIONS

Criterion	Form CCCo JPA	Join MCE	Join EBCE	Stay with PG&E
Rates	Likely lower	Likely Lower	Likely Lower	Base
GHG Reduction Potential	Some	Some	Some	Base
Local Control/ Governance	Greatest	Some	Greater	None
Local Economic Benefits	Greatest	Some	Greater	Minimal
Start Up Costs/Cost to Join	Low, but greater risk*	None	Unknown, but likely to be none	None
Level of Effort	Greatest	Minimal	Greater	None
Program Risks	Greatest	Minimal	Some	Base
Timing (earliest)	Mid-Late-2018	Late-2017	Mid-2018	N/A

*Start-up costs provided by the County or others are likely to be reimbursed by the JPA.

CONTRA COSTA LOAD



THE FOUR SCENARIOS MODELED

Scenario	% Renewable at Start	% Renewable at 2030	% Renewable from Local Resources
1	33%	50%	0%
2	50%	80%	0%
3	33%	50%	50%
4	50%	80%	50%

Notes:

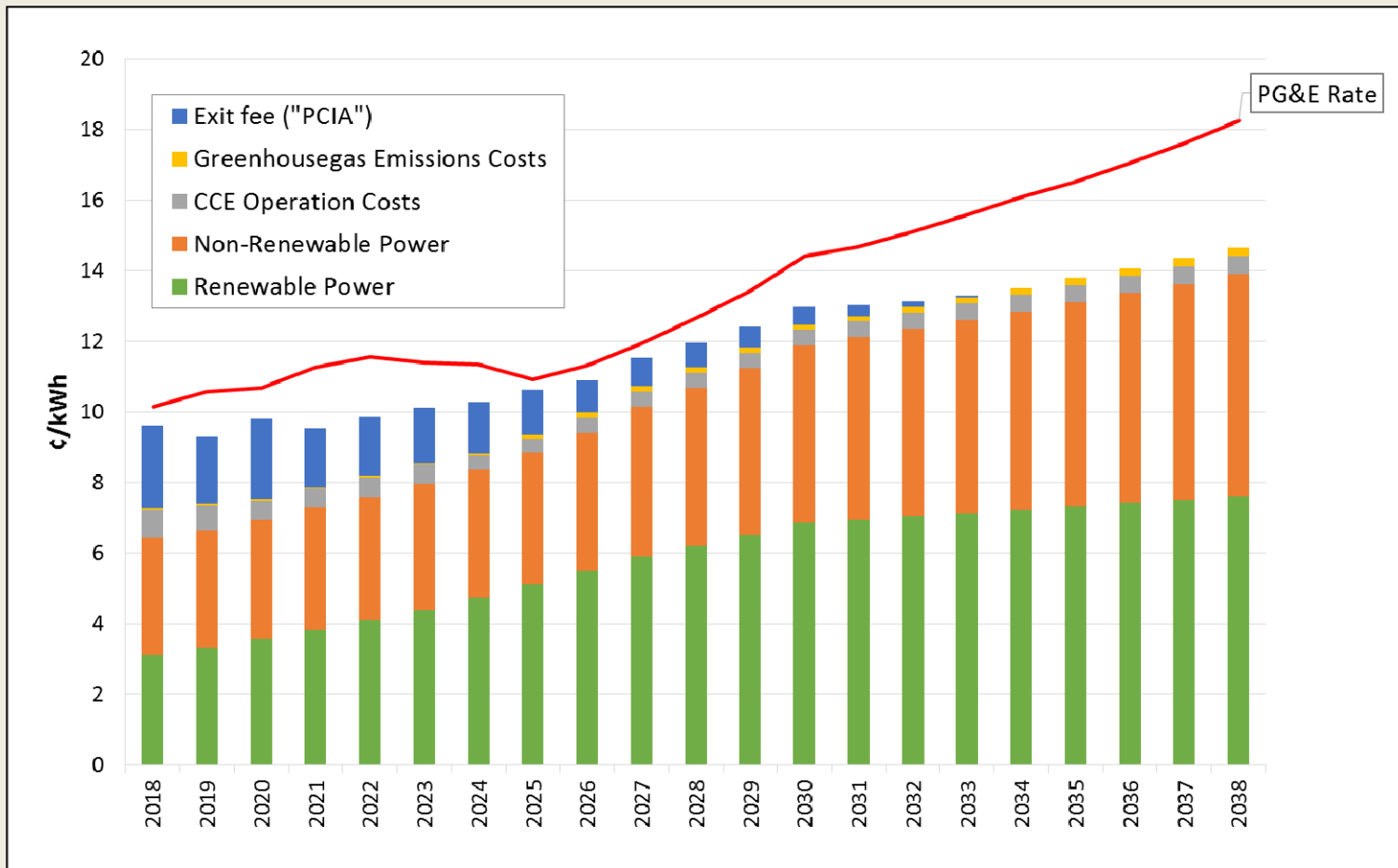
- Scenario 1 represents the lowest cost option, albeit with the least amount of renewables and least greenhouse gas (GHG) savings. Scenario 4 represents the scenario with the greatest amount of renewables (and local renewables) but at the highest cost. The other two scenarios fall in between 1 and 4.
- Customer-sited solar (rooftop) is incorporated in this analysis as a reduction to the CCE's load
- customer-sited solar does not count towards meeting the State's Renewable Portfolio Standard (RPS) and is therefore not included in the renewable procurement in these scenarios.

AVERAGE BILL SAVINGS - RESIDENTIAL

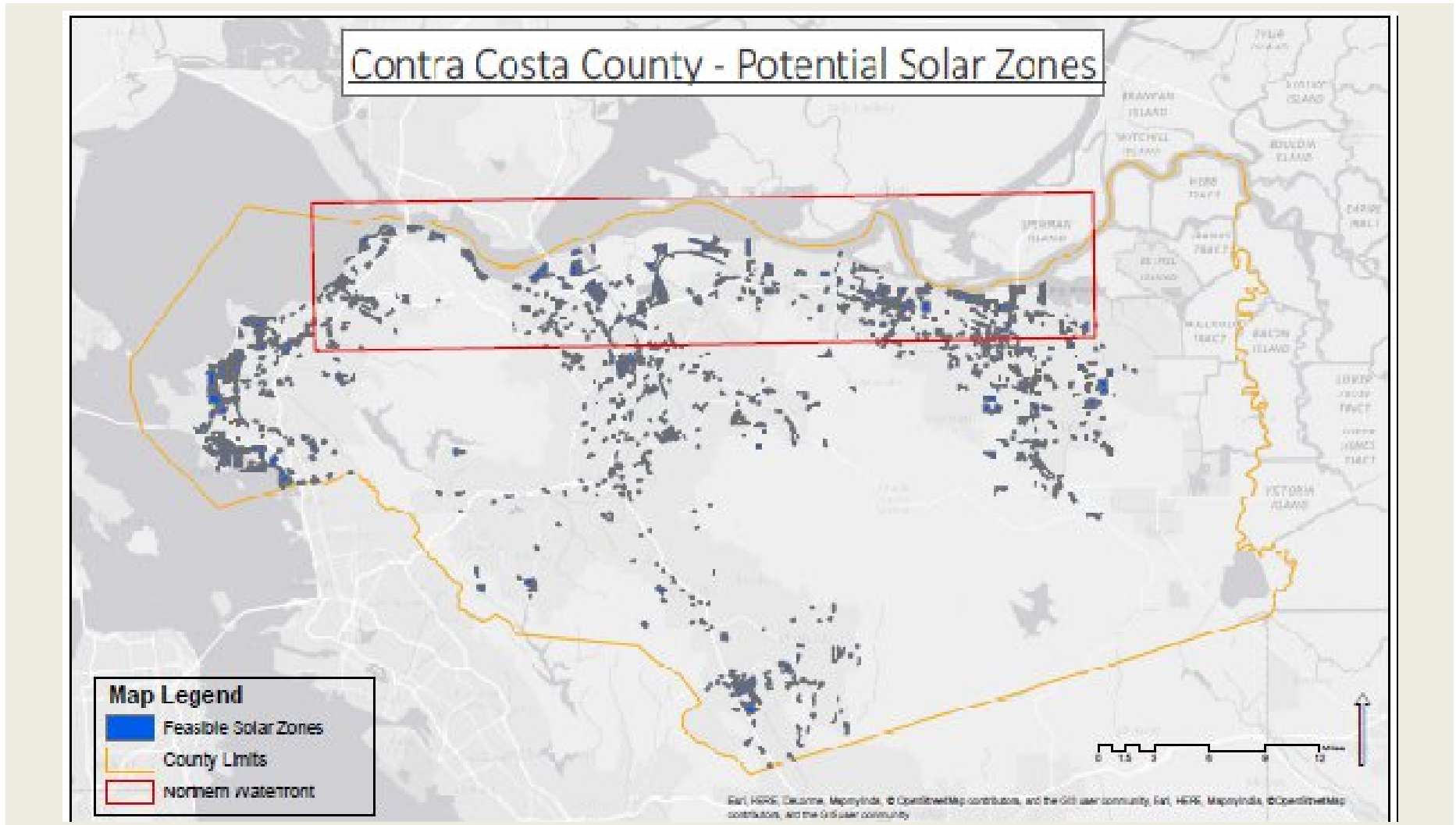
Residential Savings (%)	Scenario 1	Scenario 2	Scenario 3	Scenario 4
2018	0%*	0%	0%	0%
2020	4%	3%	3%	2%
2030	10%	9%	7%	4%
2038	11%	11%	9%	7%

* The potential rate savings in the first few years is assumed to go toward a reserve fund.

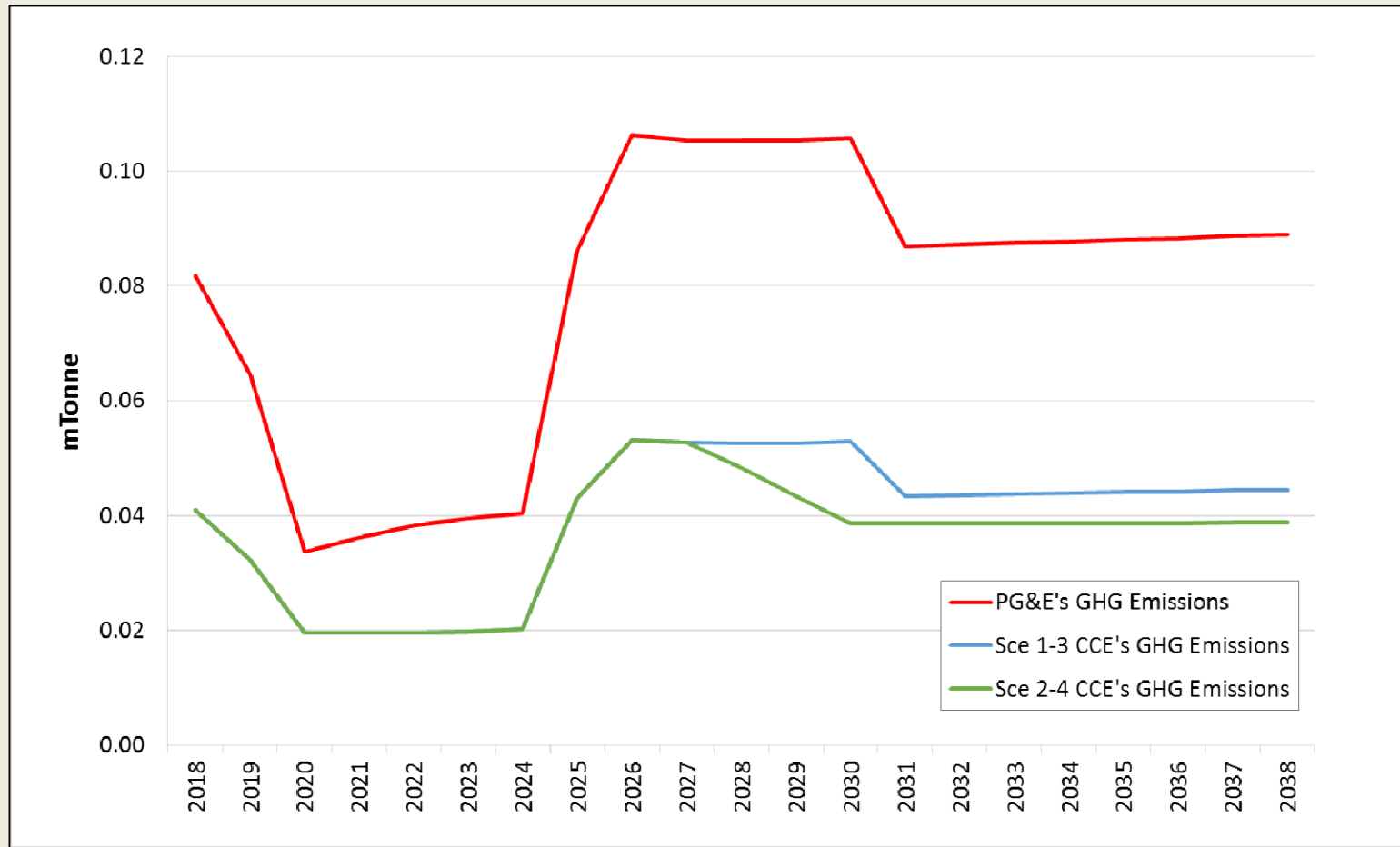
SCENARIO 4 FORECAST AVERAGE CCE COST AND PG&E RATES



PUT IN COUNTY MAP WITH SOLAR HERE



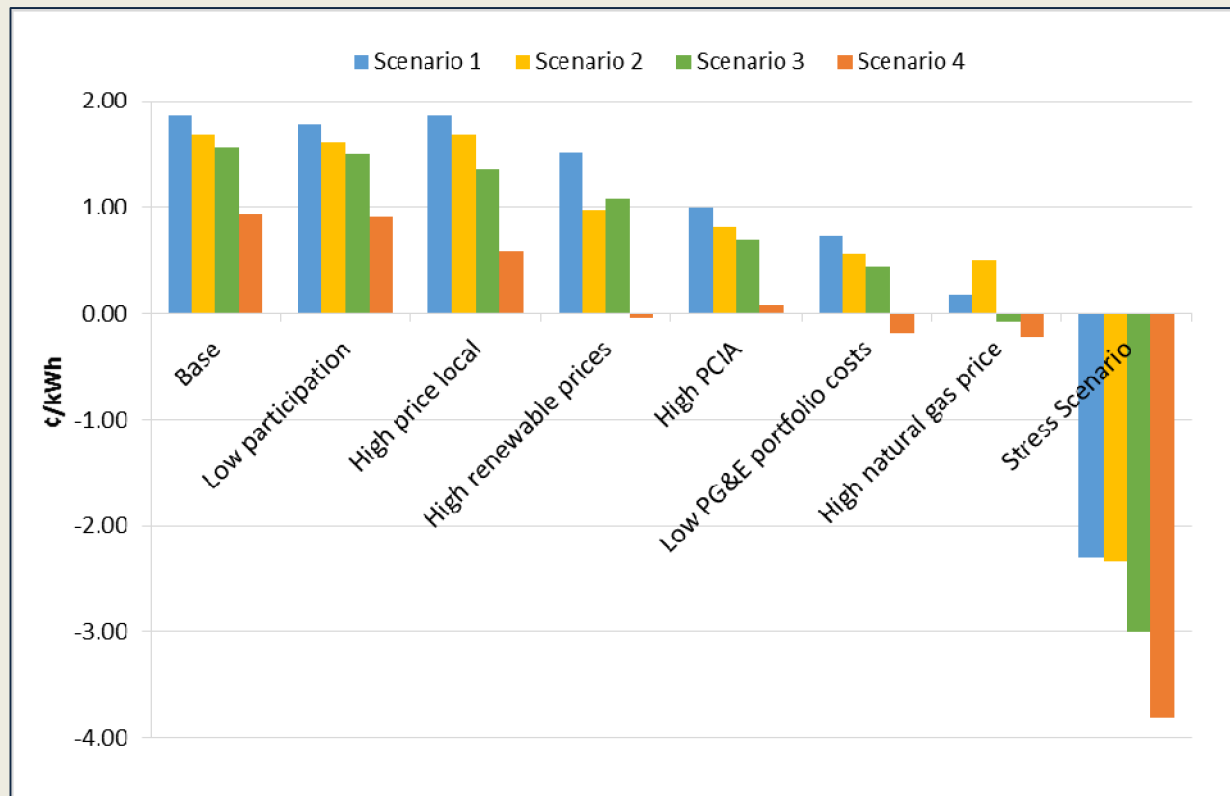
SCENARIO 4 CCE SUPPLY PORTFOLIO AND GHG EMISSIONS



PRO FORMA SENSITIVITIES

Factor	Sensitivity Change
Low CCE Participation	Double Opt-Outs from 15% to 30%
High Price Local Renewable Generation	Local renewable prices 20% higher than base forecast
Increased cost of renewable power	10% higher through 2021, 20% higher in 2021 and 2022, and 30% higher after 2022
High PCIA ("exit fee")	Retains the high PCIA expected in 2018 (2.4¢/kWh) through 2028
High Natural Gas Prices	US DOE High Gas Price Scenario, which is about 50% higher than the base case price
Low PG&E Rates	PG&E rates 10% lower than base forecast
Stress Scenario	Combined impact of high renewable costs, high PCIA, high gas price and low PG&E rates.

DIFFERENCE BETWEEN PG&E CUSTOMER RATES AND CCE CUSTOMER RATES



Note: this chart shows the 2018-2028 average of each sensitivity scenario

CCE SCENARIO ECONOMIC IMPACT DRIVERS

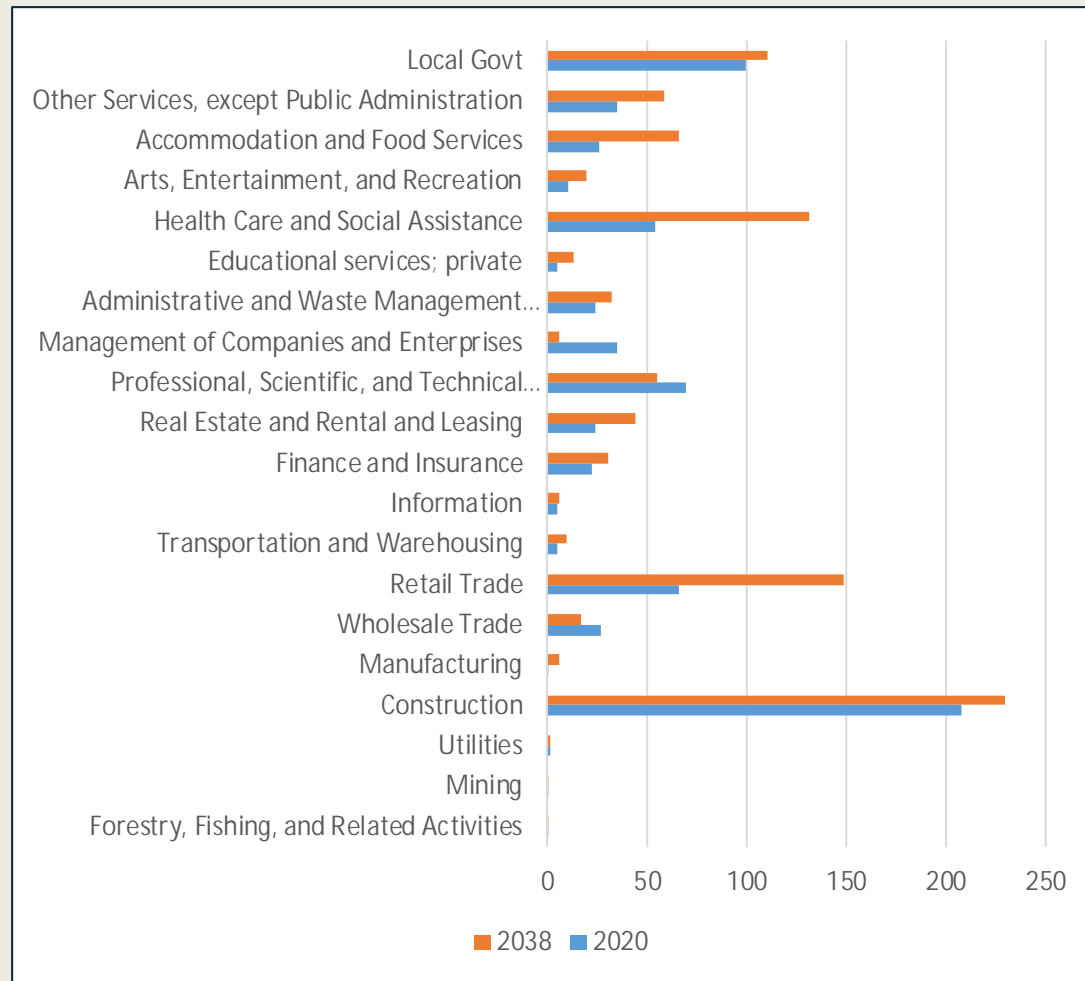
2018-2038, millions of nominal dollars

Scenario	Net Rate savings County customers	CCE Small Solar Investment		CCE Small Solar O&M	
		Contra Costa County	Neighboring Counties	Contra Costa County	Neighboring Counties
1	\$2,390	\$0	\$0	\$0	\$0
2	\$2,251	\$0	\$0	\$0	\$0
3	\$1,656	\$456	\$456	\$234	\$234
4	\$614	\$827	\$827	\$375	\$375

AVERAGE ANNUAL JOB IMPACTS

Scenario	Contra Costa	Surrounding 4 Counties	All 5 counties
1	681	50	731
2	638	48	686
3	654	268	922
4	529	412	941

SCENARIO 4: JOBS ADDED AMONG CONTRA COSTA SECTORS



MAIN CCE RISKS

Risk	Magnitude	Mitigation
Financial Risks to CCE Members	Low	Keep CCE JPA's financial obligations separate from jurisdiction's
Procurement-Related Risks (i.e., can't meet rate or GHG targets)	Medium-low	Enter into balanced portfolio of power contracts
Legislative and Regulatory Risks	High	Monitor and advocate at legislature and CPUC
PCIA ("Exit Fee") Uncertainty	High	Establish rate-stabilization fund to account for volatile PCIA
PCIA Policy Uncertainty	High	Monitor and advocate at legislature and CPUC
Availability/price of low-carbon resources	Medium	Enter into balanced portfolio of power contracts
Bonding Risk	Low	Monitor and advocate at CPUC

CONCLUSIONS (SO FAR)

- Likely able to meet or beat PG&E's retail rates.
- Can facilitate greater renewable generation in the County
- Can reduce GHGs, but need more than just increased RPS
- Can create 500 and 1,000 new jobs in county
- Trade-offs between different CCE options
 - Forming a stand-alone CCE: greatest control and local benefit potential
 - Joining MCE: quickest, but at loss of local control.
 - Joining EBCE: longer path than MCE, but with the opportunity to influence policies and formation
 - Joining MCE or EBCE can be delayed but it may result in an "entry fee" or higher PCIA.

QUESTIONS?

EXTRA / BACKUP SLIDES

FORMING CONTRA COSTA CCE (VS JOINING MCE OR EBCE)

Benefits	Risks
More Local control (voting share not diluted)	Commitment of County and city resources to establish a new CCE agency
Can form JPA and policies to fully reflect County interests and values	Higher risks due lack of experience, fewer partners
Greatest potential for local economic development (due largely to more local control)	Would need to establish programs, contractors, credit, etc.
Even if formed, individuals may still select PG&E as their power provider	Longest time line to begin enrolling customers

JOINING MCE (VS EBCE)

Benefits	Risks
5 other Contra Costa County communities have already joined	May have less Board representation (if all of Contra Costa County and its jurisdictions are represented by a shared seat)
Established, successful program with credit capacity and programs in place	May be less of a "fit" compared to East Bay identification and sensibilities (or, for some cities, this may be a benefit)
Likely easier transition/implementation	Programs are already in place; less/minimal input into their formation. Perhaps less ability to focus on local build out and new programs
Likely will be able to enroll customers sooner than EBCE	Joining a large Board serving a very diverse customer base and geography

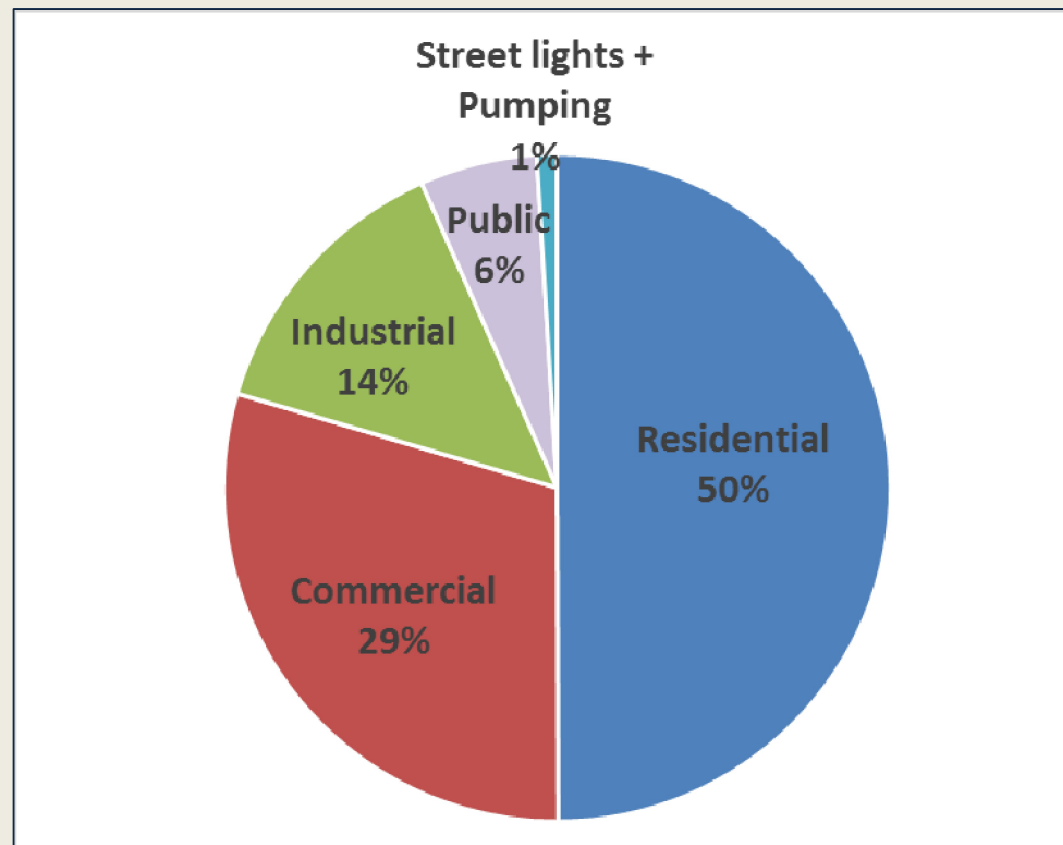
JOINING EBCE (VS MCE)

Benefits	Risks
Coming in closer to the "ground floor" – opportunity to influence policy direction and program development	Likely to take longer to enroll County communities
May be more mission or cultural alignment (East Bay vs. Marin) for some communities	Path to joining is not clear
Board will more likely be one seat per member jurisdiction (not a shared seat)	May be a small fish among some very large fishes (Oakland, Hayward)
Weighted voting process is a little clearer	Union focused policies may be difficult for some
EBCE working on a local development business plan with emphasis on local power production in the East Bay	

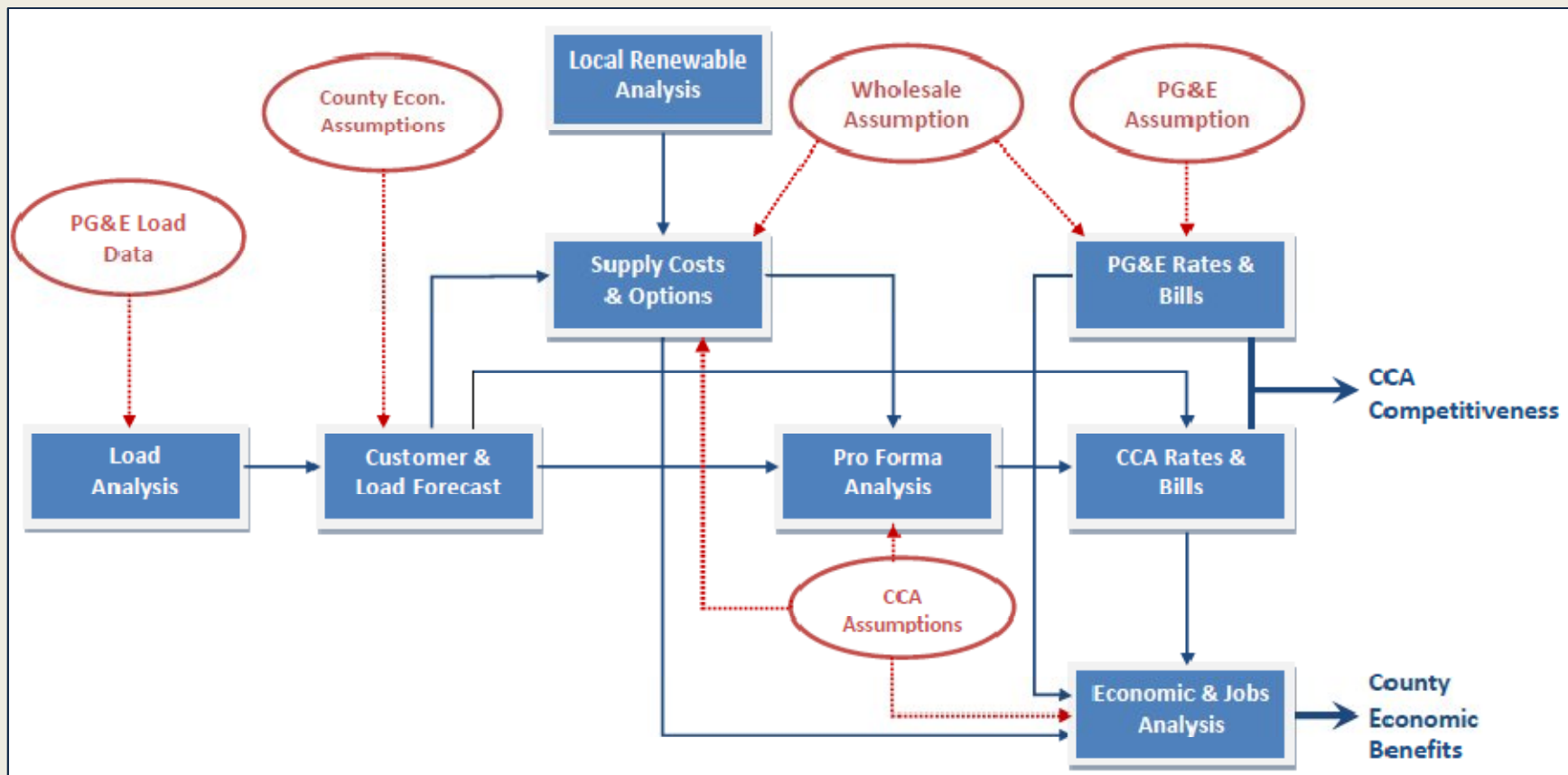
REMAINING WITH PG&E

Benefits	Risks
Experienced provider	Higher GHG emissions
State regulatory protection	Less local renewable generation
Continuity- same firm provides all services	Higher electricity rates than CCE rates under most scenarios
No action needed by City/County—status quo	No local control
May be able to join a CCE at a later date (but perhaps at some cost)	No local input into policies and offerings
	Less local economic development
	Individuals can remain on bundled PG&E service even though their community is a CCE member

PG&E'S 2015 BUNDLED LOAD BY RATE CLASS



TASK MAP



ESTIMATED START-UP COSTS

Item	Cost
Technical Study	\$200,000
JPA Formation/Development	\$100,000
Implementation Plan Development	\$50,000
Power Supplier Solicitation & Contracting	\$75,000
Staffing	\$700,000
Consultants and Legal Counsel	\$400,000
Marketing & Communications	\$250,000
PG&E Service Fees	\$75,000
CCA Bond	\$100,000
Miscellaneous	\$300,000
Total	\$2,250,000
Working Capital	\$21,500,000
Total	\$23,750,000

CCE 100% GREEN RATE PREMIUMS

CCE	Rate Option	Increment Above Default Rate
Marin Clean Energy	Deep Green	1¢/kWh
Sonoma Clean Power	EverGreen	3.5¢/kWh
Lancaster Choice Energy	Smart Choice	\$10/month
Peninsula Clean Energy	ECO100	1¢/kWh
Potential Contra Costa Co. CCE	TBD	~1.5¢/kWh

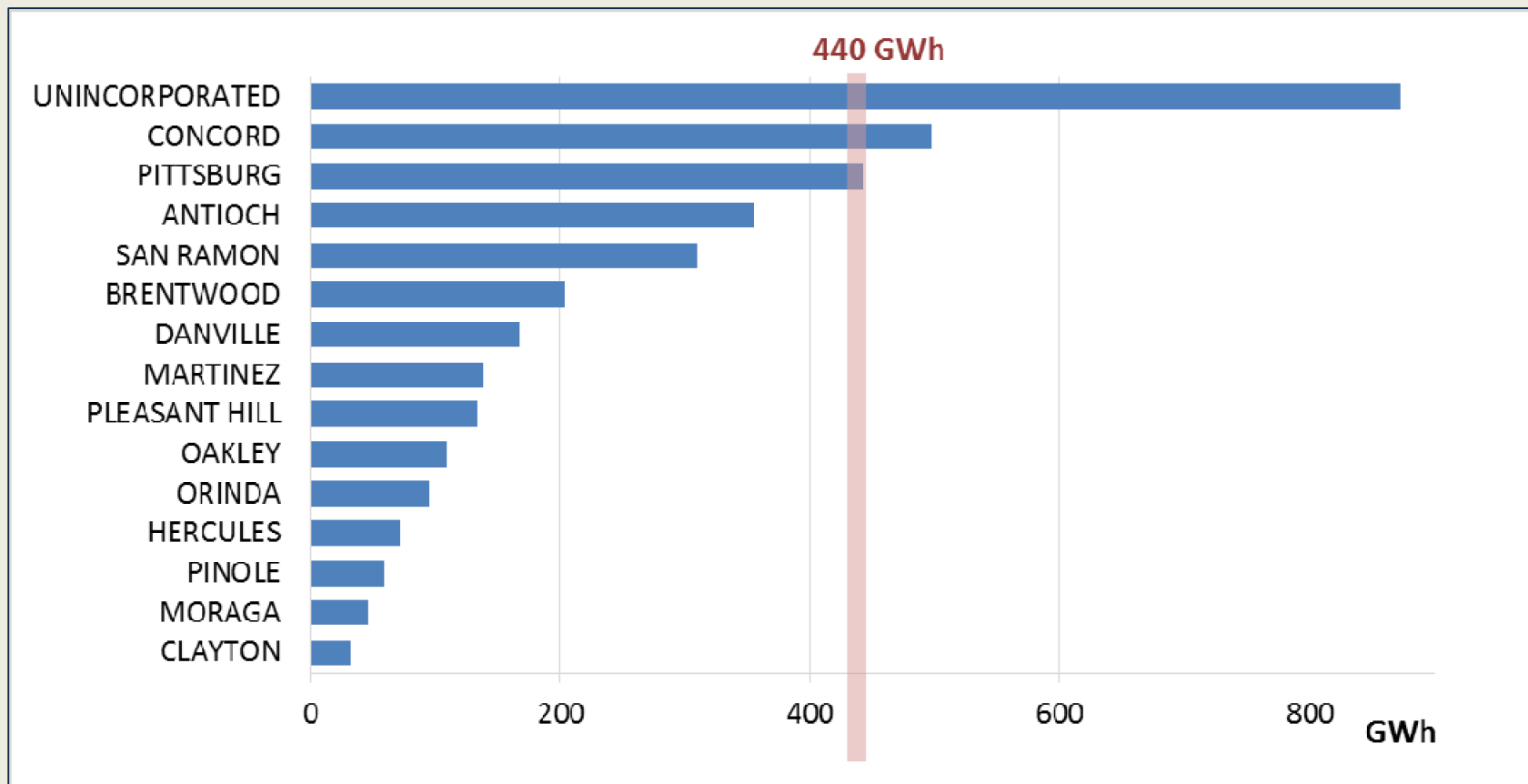
SCENARIO 1 SAVINGS FOR RESIDENTIAL CCE CUSTOMERS

Residential	Monthly Consumption (kWh)	Bill with PG&E (\$)	Bill with Contra Costa County CCA (\$)	Savings (\$)	Savings (%)
2018	500	121	121	0	0%
2020	500	129	124	5	4%
2030	500	189	171	18	10%
2038	500	254	227	27	11%

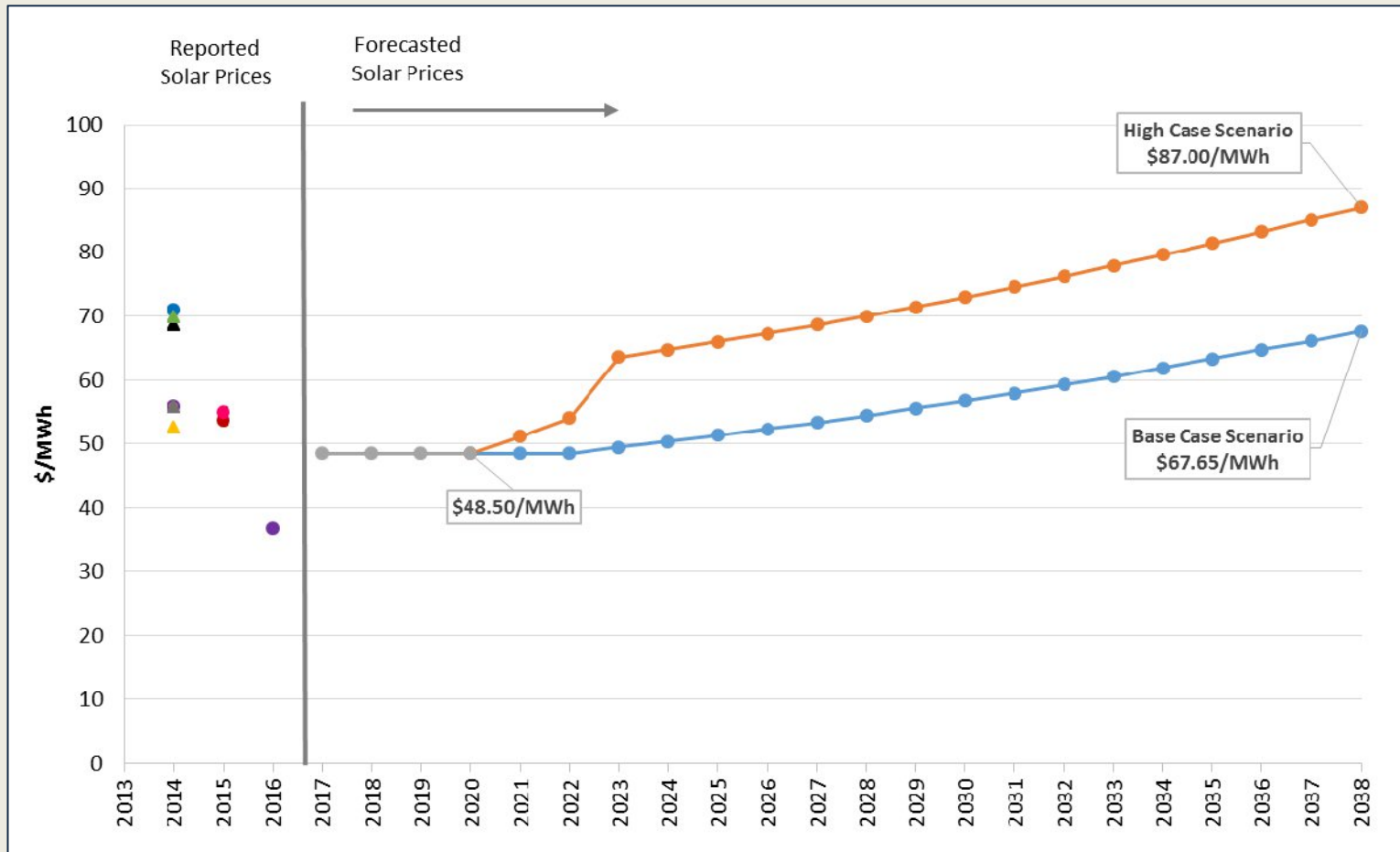
SCENARIO 4 SAVINGS FOR RESIDENTIAL CCE CUSTOMERS

Residential	Monthly Consumption (kWh)	Bill with PG&E (\$)	Bill with Contra Costa County CCE (\$)	Savings (\$)	Savings (%)
2018	500	121	121	0	0%
2020	500	129	126	3	2%
2030	500	189	182	7	4%
2038	500	254	235	19	7%

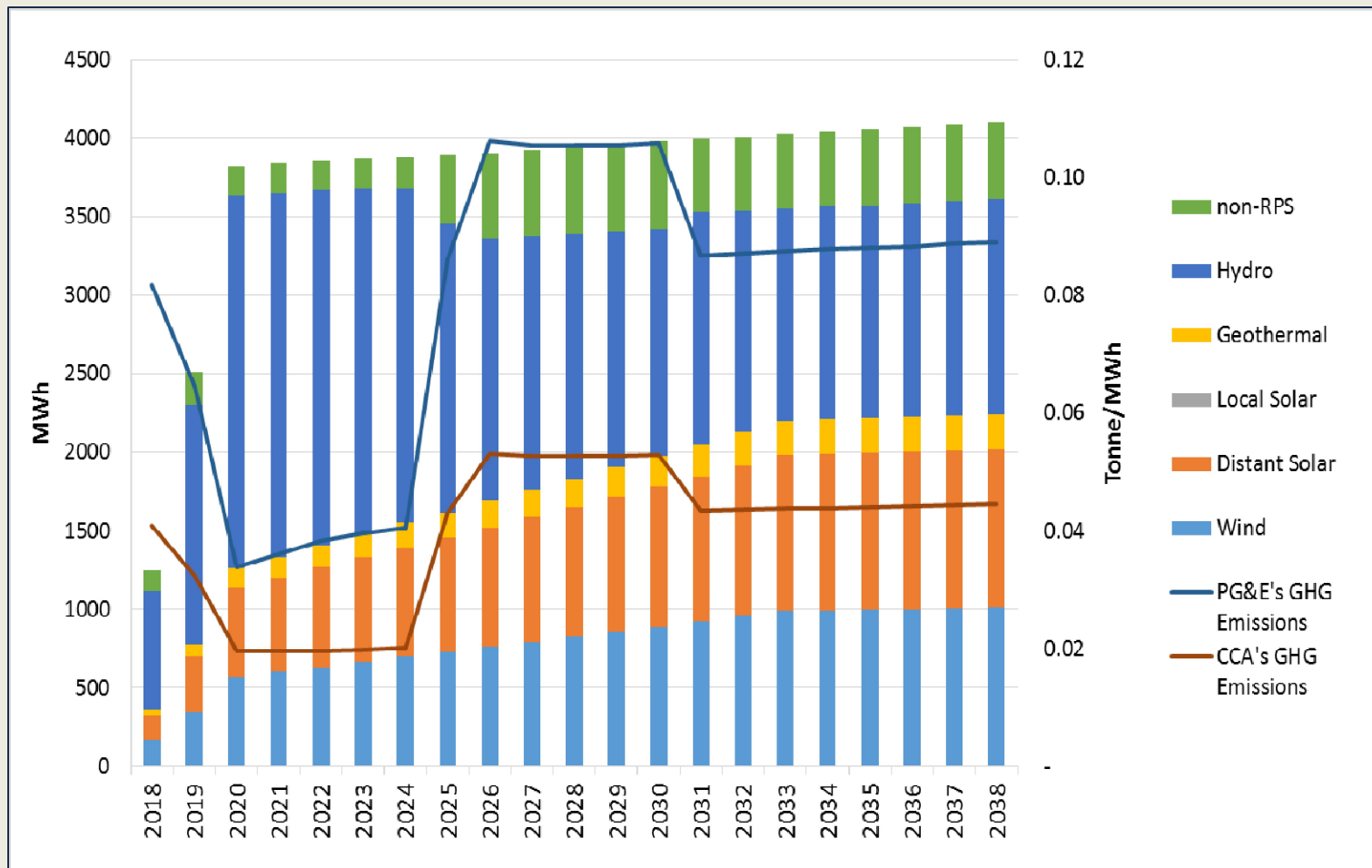
POTENTIAL LOAD PER CITY (85% PARTICIPATION RATE)



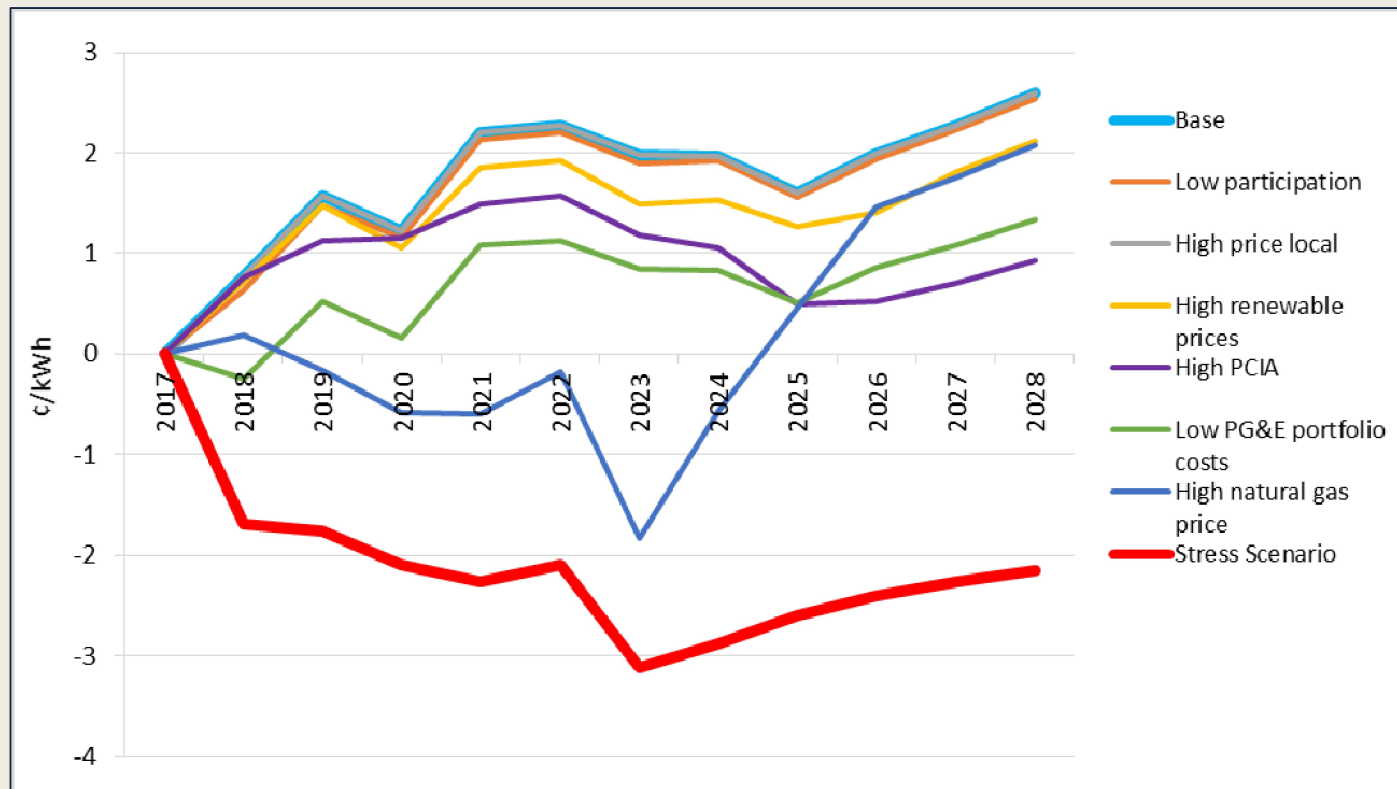
LARGE-SCALE NON-LOCAL SOLAR PRICE FORECAST



SCENARIO 1 CCC CCE SUPPLY PORTFOLIO AND GHG EMISSIONS



DIFFERENCE BETWEEN PG&E CUSTOMER RATES AND CCE CUSTOMER RATES

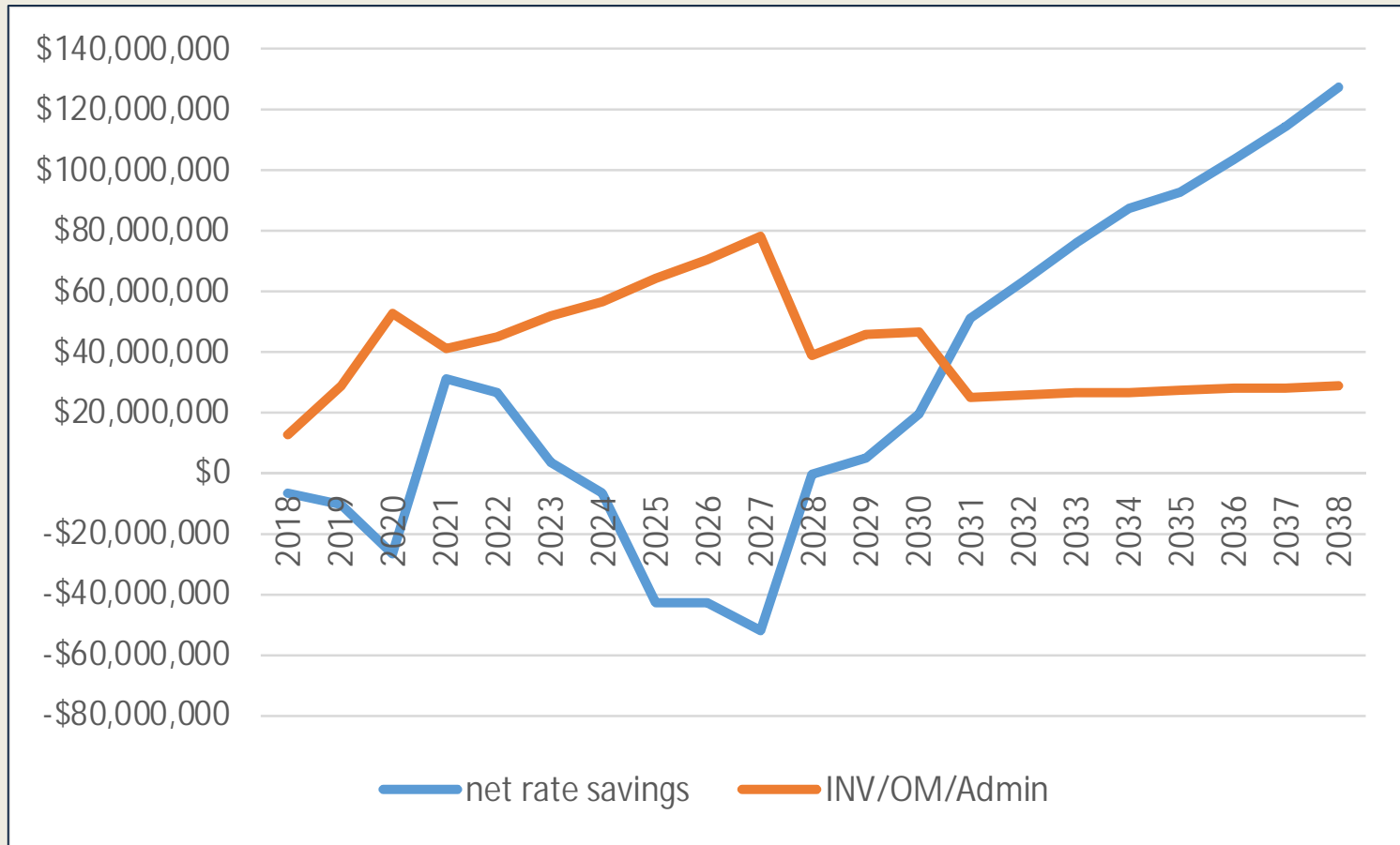


LOCAL FULFILLMENT OF CCE BUDGETS

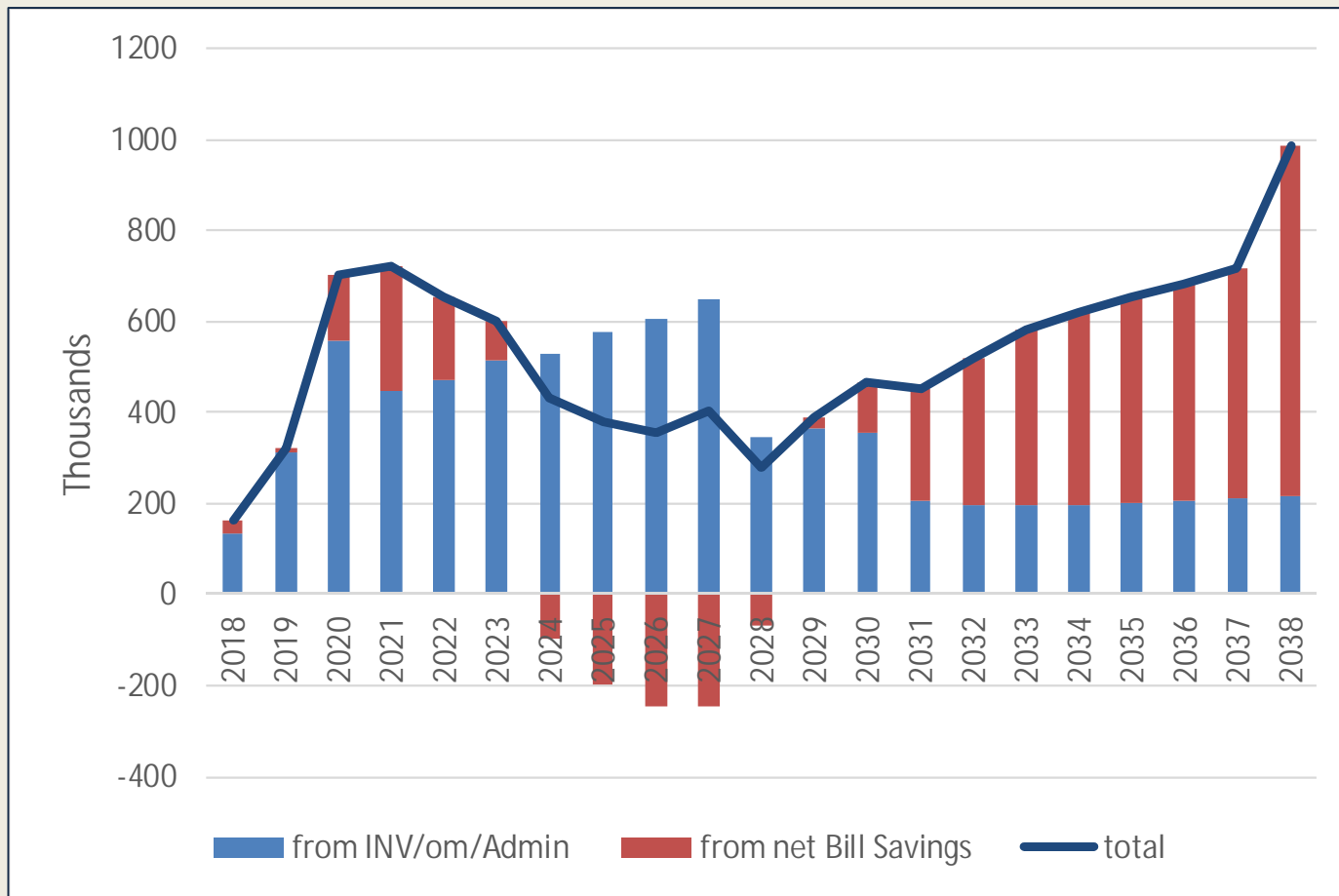
	CCA Admin	Solar Invest	Solar O&M	CCA Admin	Solar Invest	Solar O&M
	Scenario 1			Scenario 3		
Budget	\$316	na	na	\$316	\$456	\$233
In-County						
locally procured	\$189	na	na	\$189	\$234	\$146
% capture local	60%	na	na	60%	51%	63%
Surrounding Counties						
locally procured	na	na	na	na	\$234	\$146
% capture local	na	na	na	na	51%	63%
	Scenario 2			Scenario 4		
Budget	\$316	na	na	\$316	\$ 827	\$375
In-County						
locally procured	\$189	na	na	\$189	\$425	\$235
% capture local	60%	na	na	60%	51%	63%
Surrounding Counties						
locally procured	na	na	na	na	\$450	\$219
% capture local	na	na	na	na	51%	63%

Note: this table is in millions of nominal dollars

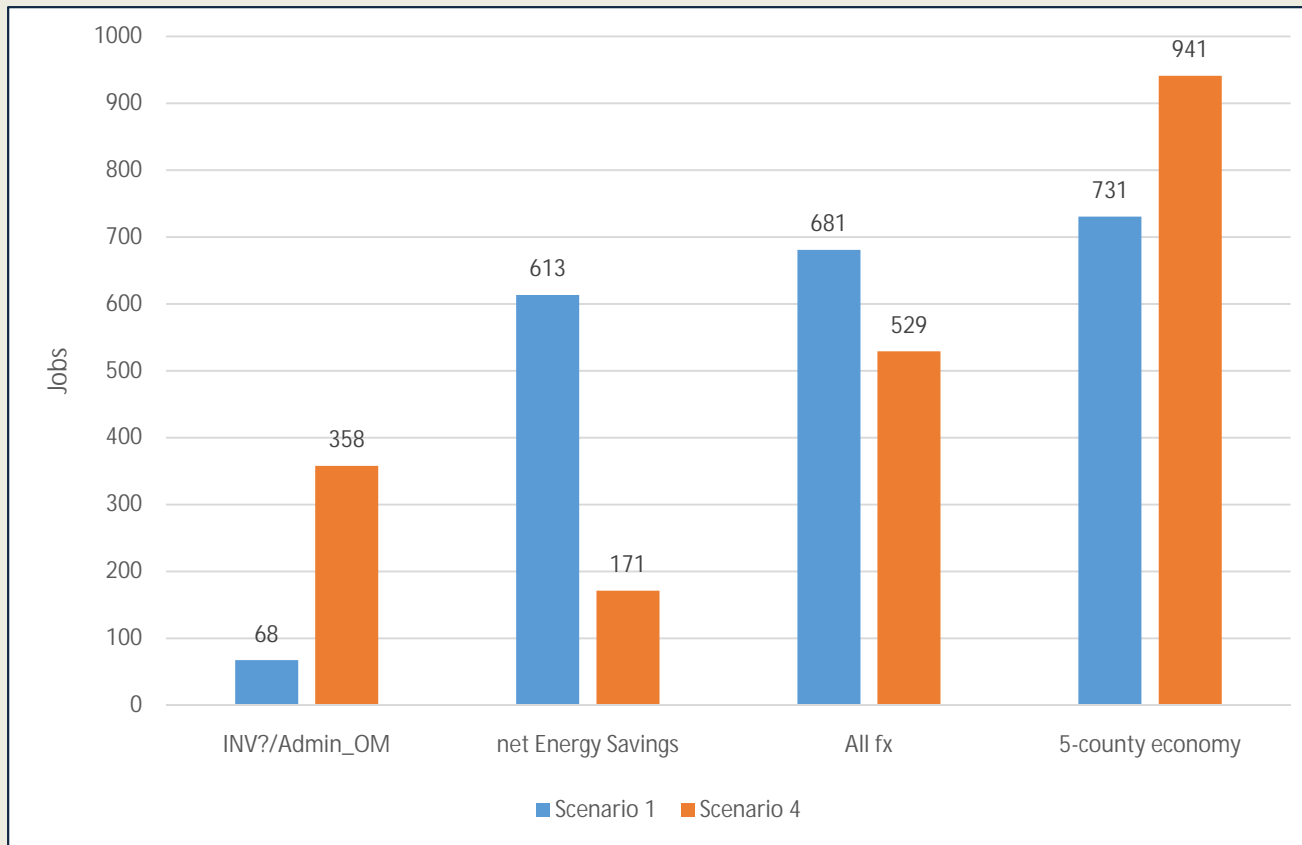
SCENARIO 4: CONTRA COSTA'S "LOCAL" BENEFIT



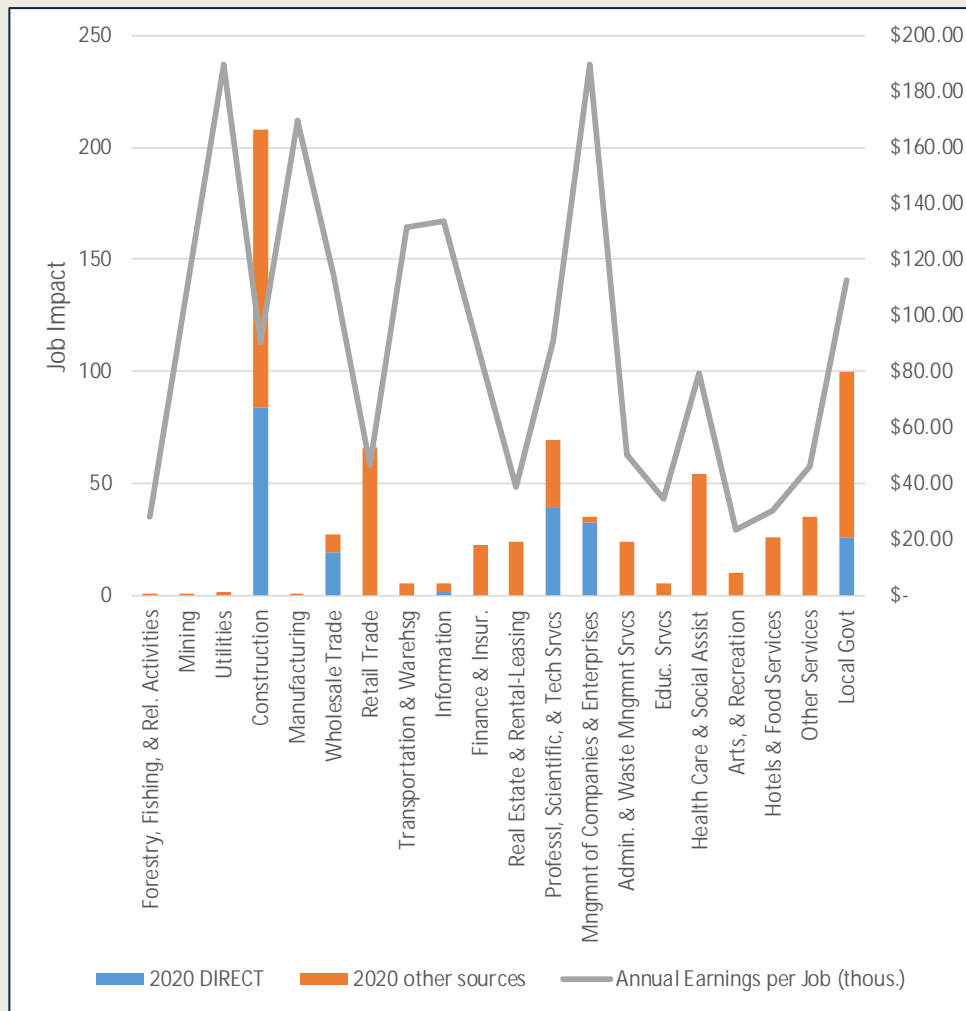
SCENARIO 4: CONTRA COSTA JOB IMPACT BY SOURCE



AVERAGE ANNUAL JOB IMPACT IN CONTRA COSTA COUNTY BY SOURCE



SCENARIO 4: JOB CREATION BY SECTOR, IMPACT STAGE AND PAY SCALE IN 2020



CONTRA COSTA CCE VS ALAMEDA CCA

Average Period 2018-2030	Contra Costa County	Alameda County
Price natural gas (\$/MMBtu)	5.70	4.90
Wholesale (\$/MWh)	51.30	44.80
PG&E Capacity (\$/MWh)	74	39
CCE Capacity (\$/MWh)	52	39
Wind (\$/MWh)	56	57
Solar Distant (\$/MWh)	51	51
Solar Local (\$/MWh)	70	74
% Local Solar by 2030	25%	10%
PG&E rate (¢/kWh)	11.7	10.4
PCIA rate (¢/kWh)	1.4	1.4
CCE rate (¢/kWh)	9.4	8.3
Difference CCE-PGE (¢/kWh)	2.3	2.1

CONTRA COSTA CCE VS ALAMEDA CCA

- Bundled Load Forecast → PG&E's bundled load forecast is 25% below (2018-2030)
- Natural Gas Prices → \$0.8/MMBtu higher
- Diablo Canyon retirement application →
 - RPS requirements increased for 2030-2038 from 50% to 55% (PG&E and CCE)
 - Advanced 5 years the load-resource capacity balance → Capacity prices starts increasing in 2025 instead of 2030

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