Results from the California Energy Efficiency Potential Study for New Construction Markets

July 26-27, 2006

MAESTRO/CALMAC Evaluation Showcase

Pacific Energy Center

Presenter:

Rachel Harcharik

Itron

Presentation Overview

- Energy Savings Potential
  - Residential New Construction Analysis
    - Measures Covered
    - Results
  - Commercial New Construction Analysis
    - Measures Covered
    - Results
  - Industrial New Construction Analysis
    - Measures Covered
    - Results
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Potential in Newly Constructed Residential Buildings

Itron

RNC - Measures Included in Analysis

- Objectives of the New Construction Potential Study included finding the savings potential for residential buildings that would approximate the building of ENERGY STAR® homes the 2001 and the 2005 Standards by Title 24 climate zone.
- Measures considered for the packages include HVAC equipment, shell measures (including radiant barriers, windows, insulation, etc.), and water heaters.
- Developed packages of measures that could be added to the baseline home/building to allow it to reach the efficiency levels listed below:

Scenario	Description	2003-2005 Level of Efficiency	2006-2013 Level of Efficiency
1	Code Level	2001 Code	2005 Code
2	Base Activity Level	2001 Code + 15%	2005 Code + 10%
3	High Activity Level	2001 Code + 25%	2005 Code + 15%

RNC - Single Family Homes – Least Cost Packages

15% Above 2001 Standards

CEC_CZ	Story	FlArea	Package	Base Compliance	Package Compliance	Cost	Window Type	Wall	Roof	Insulation Cert	Radiant Barrier	TXV	Tight Ducts	Infiltration Testing	HouseWrap	SEER	AFUE	EF	Duct Design	Duct Insulation
01	1	2,400	43	8%	16%	$513	2VL	19	30	No	Yes	No	Yes	No	No	10	92%	0.63	No	Yes
02	1	2,400	6	10%	16%	$592	2VL	13	38	No	No	Yes	No	No	No	12	92%	0.63	No	No
03	1	2,400	0	15%	15%	$0	2VL	13	30	No	No	No	No	No	No	11	86%	0.62	No	No
04	1	2,400	4	12%	16%	$400	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
05	1	2,400	0	17%	17%	$0	2VL	19	30	No	No	No	No	No	No	11	86%	0.60	No	No
06	1	2,450	0	22%	22%	$0	2VC	13	30	No	No	No	No	No	No	10	80%	0.60	No	No
07	1	2,450	1	13%	21%	$207	2VL	13	30	No	No	No	No	No	No	10	80%	0.60	No	No
08	1	2,150	4	12%	20%	$450	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
09	1	2,150	2	14%	17%	$76	2VS	13	30	No	No	Yes	No	No	No	11	80%	0.60	No	No
10	1	2,150	4	7%	18%	$450	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
11	1	1,800	6	12%	16%	$194	2VL	19	38	No	No	Yes	No	No	No	12	86%	0.63	No	No
12	1	1,800	44	1%	15%	$827	2VS	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
13	1	1,800	44	-8%	16%	$1,027	2VS	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
14	1	2,000	43	-2%	17%	$763	2VL	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
15	1	2,000	43	-10%	19%	$763	2VL	19	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
16	1	2,000	43	1%	15%	$513	2VL	19	30	No	No	Yes	Yes	No	No	12	86%	0.63	No	Yes
01	2	2,450	43	8%	16%	$513	2VL	19	30	No	Yes	No	Yes	No	No	10	92%	0.63	No	Yes
02	2	2,450	8	12%	17%	$600	2VL	13	30	No	No	Yes	No	No	No	12	92%	0.63	No	No
03	2	2,450	0	17%	17%	$0	2VL	13	30	No	No	No	No	No	No	11	86%	0.62	No	No
04	2	2,450	2	14%	15%	$112	2VS	13	30	No	No	No	No	No	No	10	80%	0.62	No	No
05	2	2,450	0	19%	19%	$0	2VL	19	30	No	No	No	No	No	No	11	86%	0.60	No	No
06	2	2,900	4	13%	16%	$650	2VL	13	30	No	No	Yes	No	No	No	12	82%	0.63	No	No
07	2	2,900	0	19%	19%	$0	2VL	13	30	No	No	No	No	No	No	10	80%	0.60	No	No
08	2	2,900	4	13%	20%	$650	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
09	2	2,900	2	15%	16%	$115	2VS	13	30	No	No	Yes	No	No	No	11	80%	0.60	No	No
10	2	2,900	4	7%	16%	$650	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
11	2	2,900	43	8%	19%	$563	2VL	19	30	No	No	Yes	Yes	No	No	12	86%	0.63	No	Yes
12	2	2,900	24	-3%	17%	$1,812	2VS	13	30	No	No	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
13	2	2,900	50	-9%	16%	$1,831	2VS	13	49	No	Yes	Yes	Yes	No	No	12	80%	0.63	No	Yes
14	2	2,800	44	-4%	16%	$965	2VS	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
15	2	2,800	43	-13%	16%	$863	2VL	19	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
16	2	2,800	47	0%	15%	$930	2VL	19	38	No	Yes	Yes	Yes	No	No	12	86%	0.63	No	Yes

RNC - Single Family Homes – Least Cost Packages

25% Above 2001 Standards

CEC_CZ	Story	FlArea	Package	Base Compliance	Package Compliance	Cost	Window Type	Wall	Roof	Insulation Cert	Radiant Barrier	TXV	Tight Ducts	Infiltration Testing	HouseWrap	SEER	AFUE	EF	Duct Design	Duct Insulation
01	1	2,400	63	8%	20%	$2,067	2VS	19	49	Yes	Yes	No	Yes	Yes	Yes	10	92%	0.63	Yes	Yes
02	1	2,400	46	10%	25%	$1,208	2VS	13	38	No	No	Yes	Yes	No	No	12	92%	0.63	No	Yes
03	1	2,400	71	15%	25%	$1,703	2VL	13	30	No	No	Yes	Yes	Yes	Yes	12	86%	0.63	No	Yes
04	1	2,400	47	12%	26%	$1,393	2VL	13	38	No	Yes	Yes	Yes	No	No	12	80%	0.63	No	Yes
05	1	2,400	45	17%	26%	$1,155	2VL	19	38	No	No	Yes	Yes	No	No	12	86%	0.63	No	Yes
06	1	2,450	3	22%	26%	$450	2VC	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
07	1	2,450	4	13%	25%	$657	2VL	13	30	No	No	Yes	No	No	No	12	80%	0.63	No	No
08	1	2,150	45	12%	25%	$1,135	2VL	13	38	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
09	1	2,150	43	14%	26%	$963	2VL	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
10	1	2,150	43	7%	25%	$963	2VL	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
11	1	1,800	46	12%	25%	$771	2VS	19	38	No	No	Yes	Yes	No	No	12	86%	0.63	No	Yes
12	1	1,800	29	1%	26%	$2,170	2VL	13	49	No	Yes	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
13	1	1,800	29	-8%	25%	$2,370	2VL	13	49	No	Yes	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
14	1	2,000	26	-2%	25%	$1,832	2VS	13	38	No	No	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
15	1	2,000	47	-10%	25%	$1,163	2VL	19	38	No	Yes	Yes	Yes	No	No	12	80%	0.63	No	Yes
16	1	2,000	31	1%	27%	$2,401	2VL	19	49	No	Yes	Yes	Yes	Yes	Yes	12	92%	0.63	Yes	Yes
01	2	2,450	31	8%	22%	$1,934	2VL	19	49	No	Yes	No	Yes	Yes	Yes	10	92%	0.63	Yes	Yes
02	2	2,450	46	12%	25%	$1,349	2VS	13	38	No	No	Yes	Yes	No	No	12	92%	0.63	No	Yes
03	2	2,450	25	17%	26%	$1,838	2VL	13	38	No	No	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
04	2	2,450	45	14%	25%	$1,238	2VL	13	38	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
05	2	2,450	43	19%	27%	$1,163	2VL	19	30	No	No	Yes	Yes	No	No	12	86%	0.63	No	Yes
06	2	2,900	71	13%	24%	$2,092	2VL	13	30	No	No	Yes	Yes	Yes	Yes	12	82%	0.63	No	Yes
07	2	2,900	43	19%	25%	$1,163	2VL	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
08	2	2,900	44	13%	25%	$1,278	2VS	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
09	2	2,900	43	15%	25%	$1,163	2VL	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
10	2	2,900	44	7%	25%	$1,278	2VS	13	30	No	No	Yes	Yes	No	No	12	80%	0.63	No	Yes
11	2	2,900	28	8%	26%	$1,625	2VS	19	38	No	Yes	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
12	2	2,900	69	-3%	28%	$3,366	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	12	92%	0.63	Yes	Yes
13	2	2,900	69	-9%	27%	$3,666	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	12	92%	0.63	Yes	Yes
14	2	2,800	28	-4%	25%	$2,214	2VS	13	38	No	Yes	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
15	2	2,800	28	-13%	26%	$2,214	2VS	19	38	No	Yes	Yes	Yes	No	No	12	92%	0.63	Yes	Yes
16	2	2,800	31	0%	26%	$2,946	2VL	19	49	No	Yes	Yes	Yes	Yes	Yes	12	92%	0.63	Yes	Yes

RNC - Single Family Homes – Least Cost Packages

10% Above 2005 Standards

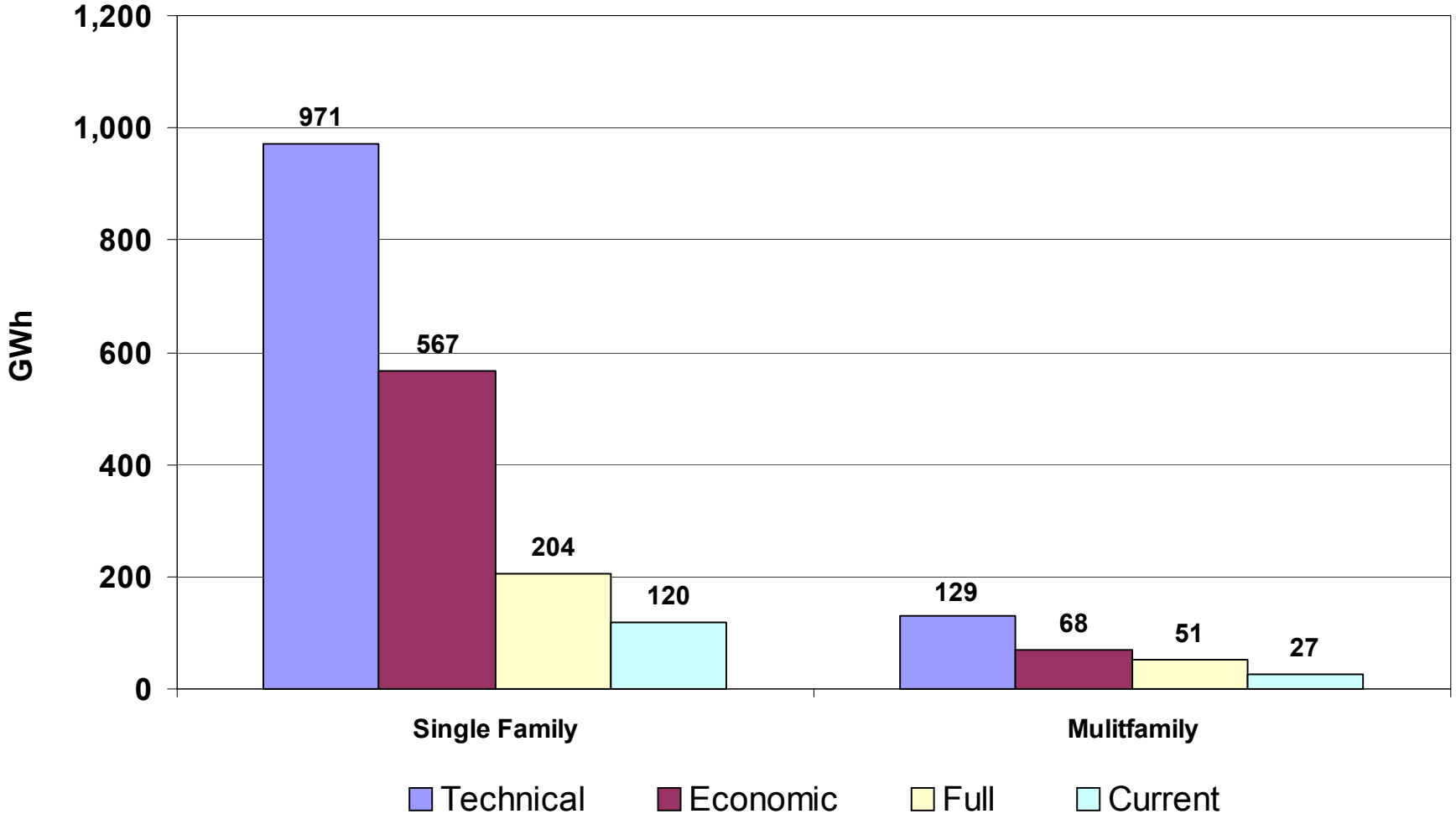
CEC_CZ	Story	FlArea	Package	Base Compliance	Package Compliance	Cost	Window Type	Wall	Roof	Insulation Certification	Radiant Barrier	TXV	Tight Ducts	Infiltration Testing	HouseWrap	SEER	AFUE	EF	Duct Design	Duct Insulation
01	1	2,400	59	2.8%	6.2%	$993	2VL	19	49	No	Yes	Yes	Yes	No	No	13	92%	0.63	No	Yes
02	1	2,400	44	2.6%	11.4%	$273	2VS	13	30	No	No	Yes	Yes	No	No	13	92%	0.63	No	Yes
03	1	2,400	43	3.7%	14.0%	$513	2VL	13	30	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes
04	1	2,400	45	0%	10%	$465	2VL	13	38	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
05	1	2,400	0	11%	11%	$0	2VL	19	30	No	No	Yes	No	No	No	13	86%	0.60	No	No
06	1	2,450	0	14%	14%	$0	2VC	13	30	No	No	Yes	No	No	No	13	80%	0.60	No	No
07	1	2,450	1	4%	15%	$157	2VL	13	30	No	No	Yes	No	No	No	13	80%	0.60	No	No
08	1	2,150	46	0%	12%	$735	2VS	13	38	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
09	1	2,150	46	2%	11%	$470	2VS	13	38	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
10	1	2,150	48	2%	13%	$506	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
11	1	1,800	46	5%	11%	$208	2VS	19	38	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes
12	1	1,800	30	1%	10%	$1,004	2VS	13	49	No	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes
13	1	1,800	66	2%	10%	$1,445	2VL	13	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
14	1	2,000	30	2%	11%	$1,271	2VS	13	49	No	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes
15	1	2,000	48	1%	11%	$400	2VS	19	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
16	1	2,000	43	-1%	11%	$44	2VL	19	30	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes
01	2	2,450	64	-2%	16%	$539	2VL	19	49	Yes	Yes	Yes	Yes	No	No	15	92%	0.63	Yes	Yes
02	2	2,450	43	1%	14%	$513	2VL	13	30	No	No	Yes	Yes	No	No	13	92%	0.63	No	Yes
03	2	2,450	6	9%	10%	$125	2VL	13	38	No	No	Yes	No	No	No	13	86%	0.63	No	No
04	2	2,450	43	3%	13%	$513	2VL	13	30	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
05	2	2,450	0	21%	21%	$0	2VL	19	30	No	No	Yes	No	No	No	13	86%	0.60	No	No
06	2	2,900	43	4%	14%	$563	2VL	13	30	No	No	Yes	Yes	No	No	13	82%	0.63	No	Yes
07	2	2,900	5	7%	10%	$167	2VS	13	30	No	No	Yes	No	No	No	13	80%	0.63	No	No
08	2	2,900	44	2%	11%	$563	2VS	13	30	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
09	2	2,900	44	0%	10%	$513	2VS	13	30	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
10	2	2,900	48	4%	13%	$517	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
11	2	2,900	48	3%	12%	$461	2VS	19	38	No	Yes	Yes	Yes	No	No	13	86%	0.63	No	Yes
12	2	2,900	69	0%	19%	$1,382	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
13	2	2,900	69	1%	13%	$1,107	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
14	2	2,800	30	2%	11%	$1,290	2VS	13	49	No	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes
15	2	2,800	42	2%	10%	$2,980	2VS	19	49	No	Yes	Yes	Yes	Yes	Yes	14	92%	0.63	Yes	Yes
16	2	2,800	45	-4%	10%	$211	2VL	19	38	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes

RNC - Single Family Homes – Least Cost Packages

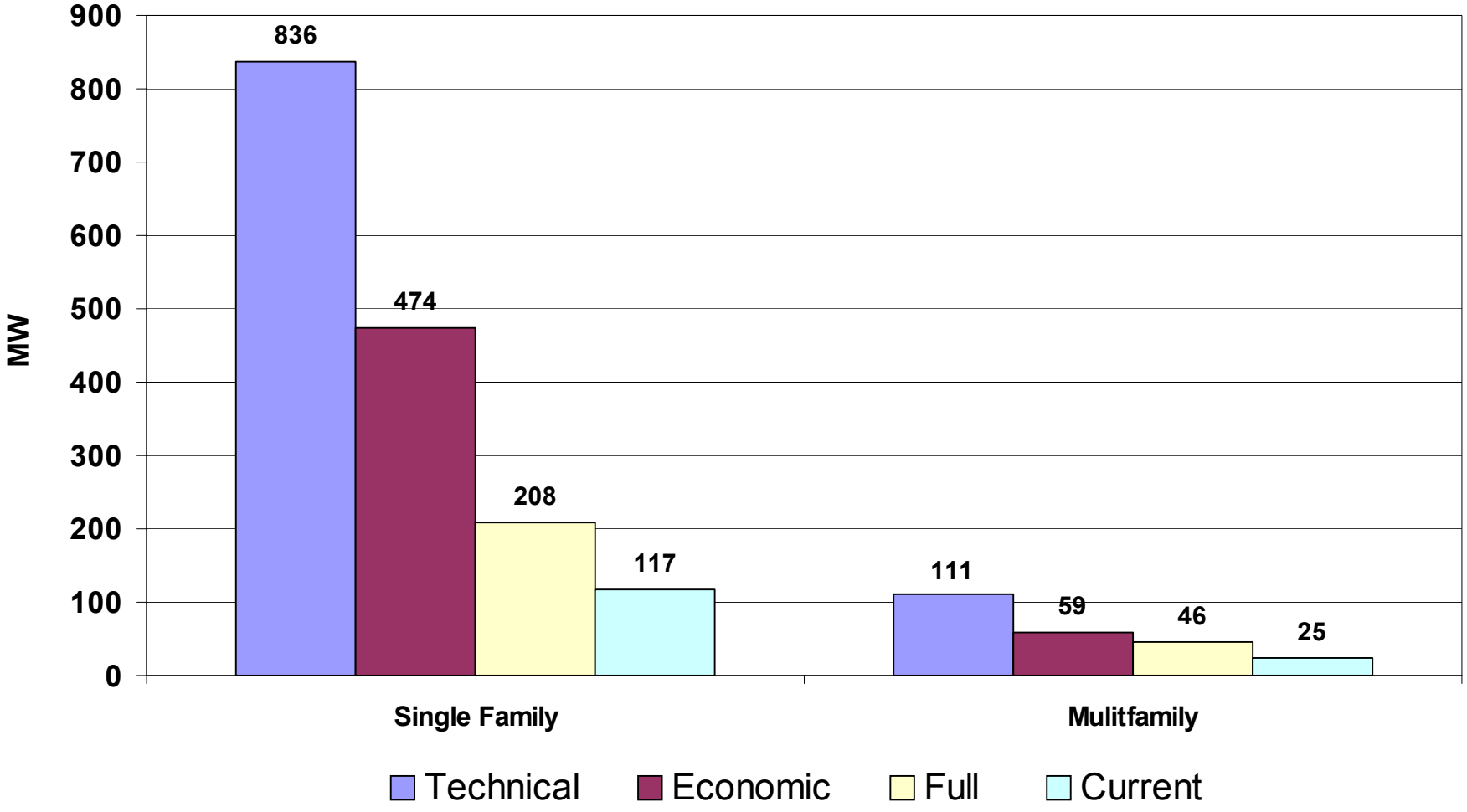
15% Above 2005 Standards

CEC_CZ	Story	FlArea	Package	Base Compliance	Package Compliance	Cost	Window Type	Wall	Roof	Insulation Certification	Radiant Barrier	TXV	Tight Ducts	Infiltration Testing	HouseWrap	SEER	AFUE	EF	Duct Design	Duct Insulation
01	1	2,400	64	2.8%	13.4%	$1,174	2VL	19	49	Yes	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes
02	1	2,400	48	2.6%	17.2%	$753	2VS	13	38	No	Yes	Yes	Yes	No	No	13	92%	0.63	No	Yes
03	1	2,400	45	3.7%	15.5%	$705	2VL	13	38	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes
04	1	2,400	50	0%	16%	$1,144	2VS	13	49	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
05	1	2,400	9	11%	16%	$519	2VL	19	30	No	No	Yes	No	No	No	13	92%	0.63	No	No
06	1	2,450	1	14%	16%	$207	2VL	13	30	No	No	Yes	No	No	No	13	80%	0.60	No	No
07	1	2,450	1	4%	15%	$157	2VL	13	30	No	No	Yes	No	No	No	13	80%	0.60	No	No
08	1	2,150	48	0%	16%	$993	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
09	1	2,150	48	2%	15%	$728	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
10	1	2,150	60	2%	16%	$1,114	2VS	13	49	No	Yes	Yes	Yes	No	No	14	80%	0.63	No	Yes
11	1	1,800	50	5%	17%	$640	2VS	19	49	No	Yes	Yes	Yes	No	No	13	86%	0.63	No	Yes
12	1	1,800	66	1%	16%	$1,509	2VL	13	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
13	1	1,800	69	2%	18%	$1,570	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
14	1	2,000	69	2%	21%	$1,861	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
15	1	2,000	63	1%	18%	$2,769	2VS	19	49	Yes	Yes	Yes	Yes	Yes	Yes	15	92%	0.63	Yes	Yes
16	1	2,000	49	-1%	15%	$684	2VL	19	49	No	Yes	Yes	Yes	No	No	13	86%	0.63	No	Yes
01	2	2,450	64	-2%	16%	$539	2VL	19	49	Yes	Yes	Yes	Yes	No	No	15	92%	0.63	Yes	Yes
02	2	2,450	44	1%	16%	$625	2VS	13	30	No	No	Yes	Yes	No	No	13	92%	0.63	No	Yes
03	2	2,450	43	9%	19%	$513	2VL	13	30	No	No	Yes	Yes	No	No	13	86%	0.63	No	Yes
04	2	2,450	46	3%	17%	$749	2VS	13	38	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
05	2	2,450	0	21%	21%	$0	2VL	19	30	No	No	Yes	No	No	No	13	86%	0.60	No	No
06	2	2,900	49	4%	15%	$1,043	2VL	13	49	No	Yes	Yes	Yes	No	No	13	82%	0.63	No	Yes
07	2	2,900	45	7%	17%	$683	2VL	13	38	No	No	Yes	Yes	No	No	13	80%	0.63	No	Yes
08	2	2,900	48	2%	17%	$965	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
09	2	2,900	48	0%	16%	$915	2VS	13	38	No	Yes	Yes	Yes	No	No	13	80%	0.63	No	Yes
10	2	2,900	28	4%	15%	$1,349	2VS	13	38	No	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes
11	2	2,900	52	3%	15%	$1,682	2VS	19	49	No	Yes	Yes	Yes	Yes	Yes	13	86%	0.63	No	Yes
12	2	2,900	69	0%	19%	$1,382	2VL	19	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
13	2	2,900	68	1%	19%	$2,275	2VS	19	49	Yes	Yes	Yes	Yes	Yes	Yes	15	92%	0.63	Yes	Yes
14	2	2,800	66	2%	15%	$2,253	2VL	13	49	Yes	Yes	Yes	Yes	No	Yes	13	92%	0.63	Yes	Yes
15	2	2,800	68	2%	14%	$3,405	2VS	19	49	Yes	Yes	Yes	Yes	Yes	Yes	15	92%	0.63	Yes	Yes
16	2	2,800	27	-4%	16%	$1,062	2VL	19	38	No	Yes	Yes	Yes	No	No	13	92%	0.63	Yes	Yes

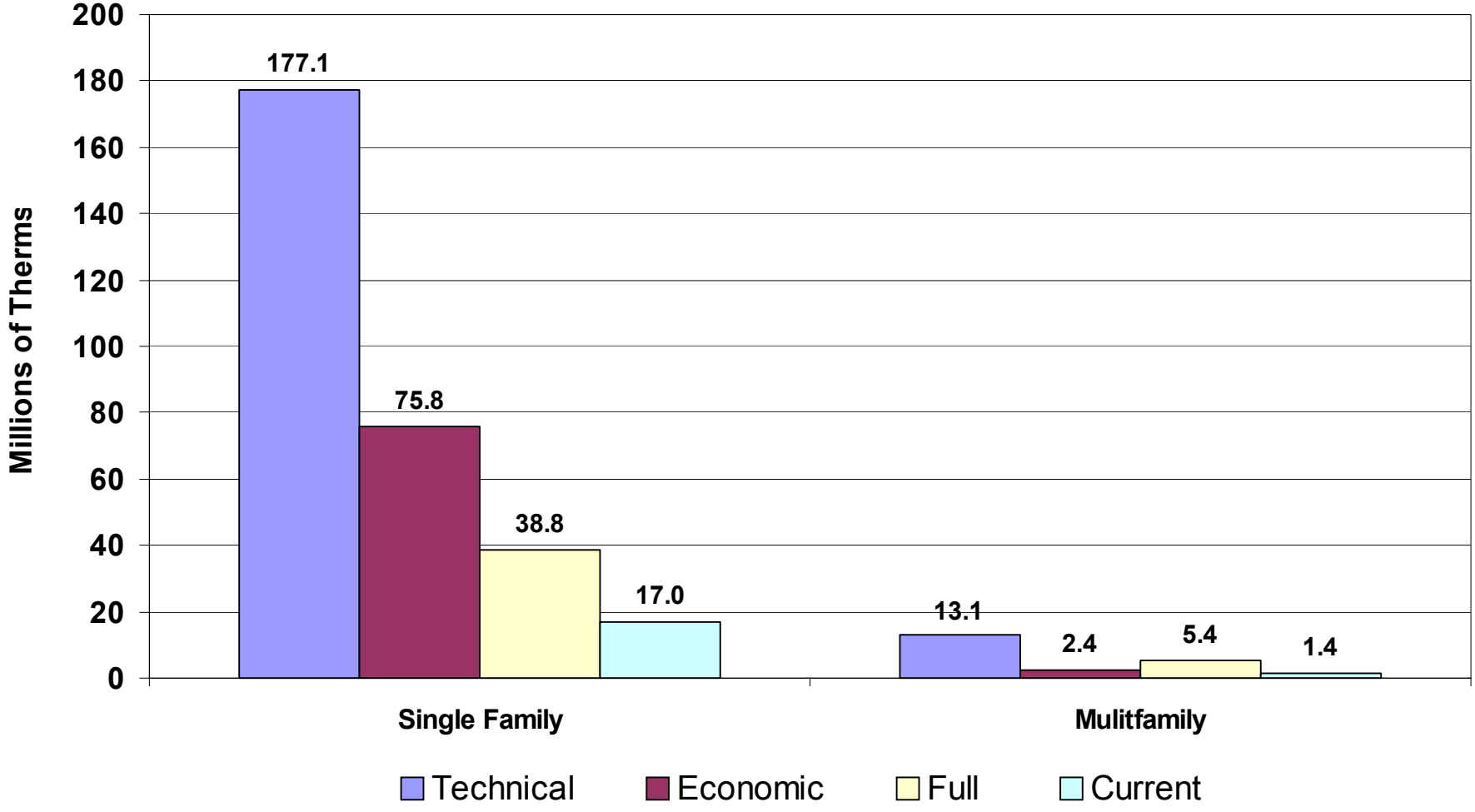
RNC - Energy Potential – by Building Type



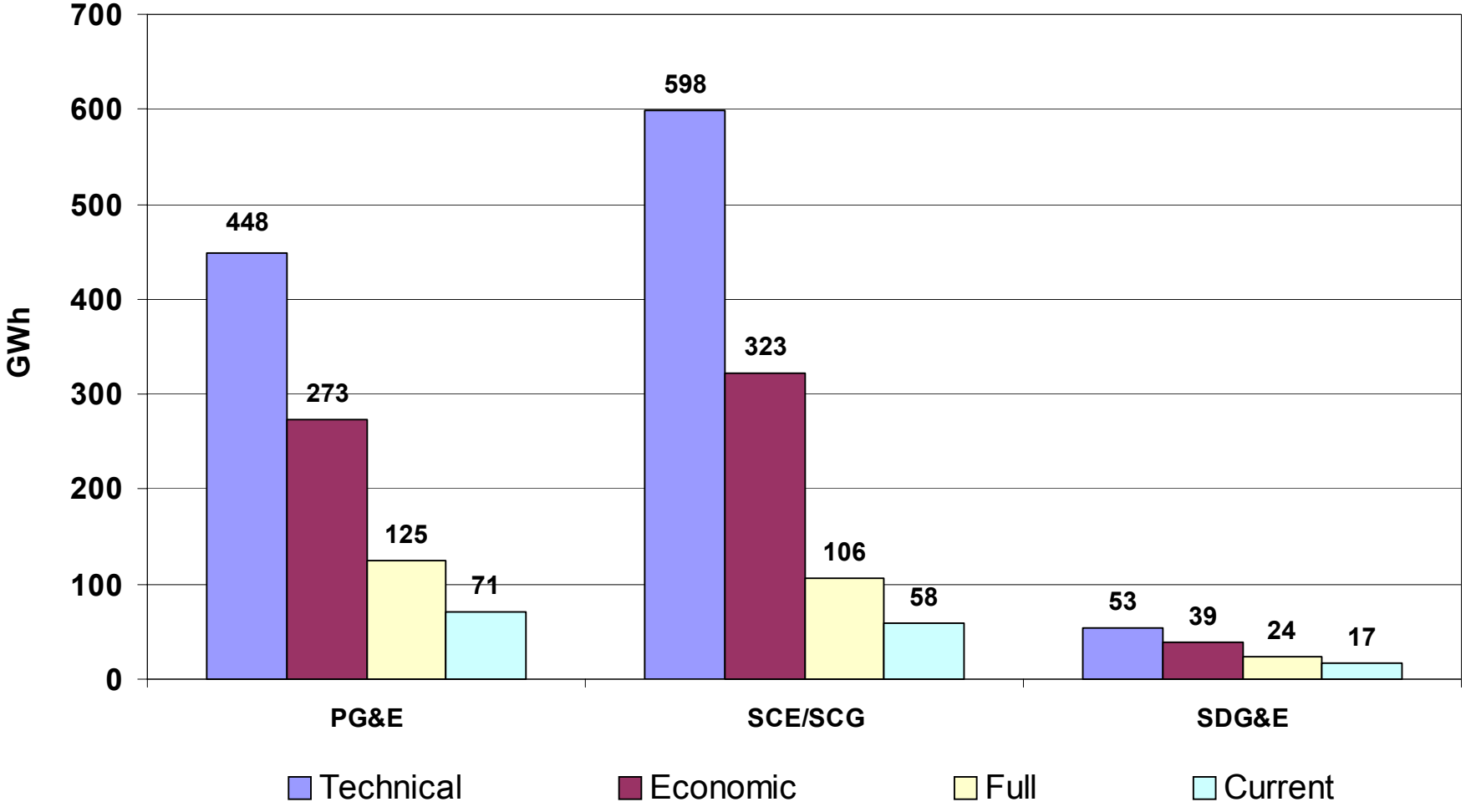
RNC - Demand Potential – by Building Type



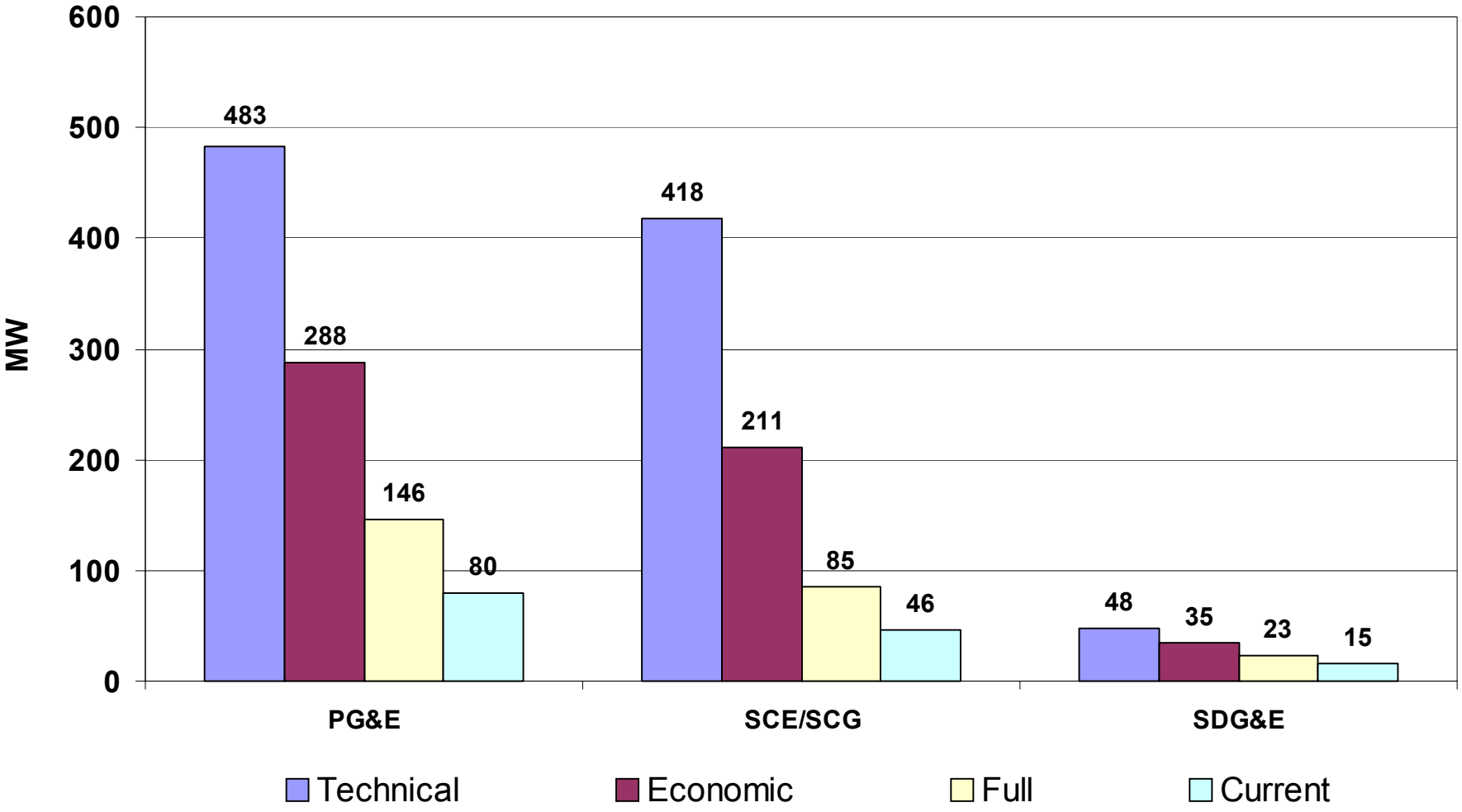
RNC - Gas Potential – by Building Type



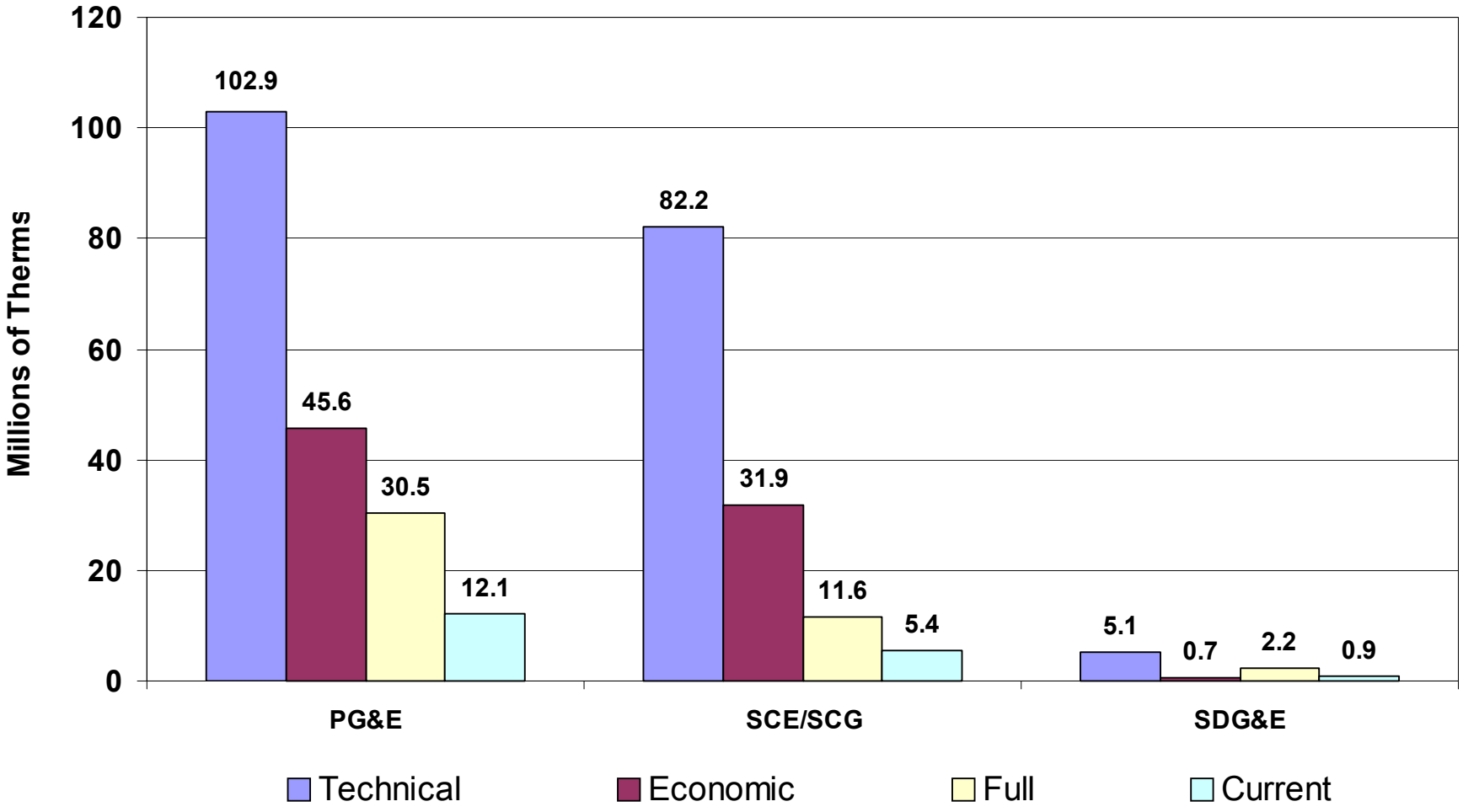
RNC - Energy Potential – by IOU



RNC - Demand Potential – by IOU



RNC - Gas Potential – by IOU



RNC - Costs and Benefits

Item	SF Current	SF Full	MF Current	MF Full
Gross Program Costs	$26,756,820	$49,833,247	$8,860,496	$18,476,731
Net Measure Costs	$132,549,582	$299,649,419	$21,684,380	$87,700,564
Gross Incentives	$132,396,597	$460,647,520	$24,761,174	$153,393,494
Net Avoided Cost Benefit	$143,572,071	$279,128,789	$22,200,984	$51,022,416
Program TRC	**0.90**	**0.80**	**0.73**	**0.48**

RNC - Costs and Benefits – PG&E

Item	Coastal - Current	Coastal - Full	Inland - Current	Inland – Full
Gross Program Costs	$2,294,155	$5,190,707	$16,190,591	$33,612,568
Net Measure Costs	$5,143,711	$19,752,076	$83,802,369	$207,917,560
Gross Incentives	$5,380,341	$32,602,450	$76,450,448	$318,225,399
Net Avoided Cost Benefit	$5,065,939	$15,470,620	$92,063,126	$189,342,848
Program TRC	**0.68**	**0.62**	**0.92**	**0.78**

RNC - Costs and Benefits – SCE/SoCalGas

Item	Coastal - Current	Coastal - Full	Inland - Current	Inland – Full
Gross Program Costs	$903,332	$1,389,090	$13,218,838	$23,475,995
Net Measure Costs	$4,486,724	$9,155,125	$42,906,187	$111,014,935
Gross Incentives	$4,772,956	$19,206,218	$50,389,584	$177,396,659
Net Avoided Cost Benefit	$2,074,255	$3,599,818	$51,247,499	$96,755,082
Program TRC	**0.38**	**0.34**	**0.91**	**0.72**

RNC - Costs and Benefits – SDG&E

Item	Coastal - Current	Coastal - Full	Inland - Current	Inland – Full
Gross Program Costs	$1,614,348	$2,665,241	$1,396,052	$1,976,376
Net Measure Costs	$10,763,772	$23,122,467	$7,131,200	$16,387,820
Gross Incentives	$12,479,474	$42,989,346	$7,684,968	$23,620,942
Net Avoided Cost Benefit	$6,492,963	$11,698,542	$8,829,273	$13,284,295
Program TRC	**0.52**	**0.45**	**1.04**	**0.72**

Potential in Newly Constructed Commercial Buildings

CNC - Measures Included in Analysis

- Similar to RNC, potential results for CNC are estimated using the costs and savings of the the least cost package to get commercial buildings to meet the efficiency levels listed below.
- Measures considered for the least cost packages include lighting, HVAC equipment, shell measures, and cooking and refrigeration equipment.
- AEC conducted the building simulations using DOE 2.1.

Scenario	Description	2003-2005 Level of Efficiency	2006-2013 Level of Efficiency
1	Code Level	2001 Code	2005 Code
2	Base Activity Level	2001 Code + 15%	2005 Code + 10%
3	High Activity Level	2001 Code + 25%	2005 Code + 15%

CNC - Energy Savings and Costs by Building Type

15% Above 2001 Standards – Climate Zones 6-7

Building Type	Base Compliance	Package Compliance	Cost ($/SF)	Electricity Savings (kWh/SF)	Gas Savings (therm/SF)
College	4.3%	16.8%	$0.44	1.96	-0.0057
Schools	6.8%	17.3%	$0.12	1.19	-0.0114
Grocery Stores	0.9%	15.3%	$3.37	8.14	-0.0410
Health Care	3.2%	10.4%	$0.74	2.11	-0.0023
Lodging	0.1%	1.4%	$1.17	1.00	0.0000
Large Office	8.2%	18.7%	-$0.07	1.36	-0.0001
Misc.	5.5%	8.1%	$0.93	1.00	-0.0227
Restaurants	0.1%	11.2%	$17.06	8.17	0.8877
Retail	6.3%	16.6%	$1.31	2.02	-0.0057
Small Office	-1.1%	10.0%	-$0.19	2.57	0.0023
Warehouse	24.1%	26.5%	$0.45	0.06	-0.0003
All	**4.5%**	**12.7%**	**$0.64**	**1.58**	**-0.0010**

CNC - Energy Savings and Costs by Building Type

15% Above 2001 Standards – Climate Zones 11-15

Building Type	Base Compliance	Package Compliance	Cost ($/SF)	Electricity Savings (kWh/SF)	Gas Savings (therm/SF)
College	1.9%	16.1%	$0.59	2.44	-0.0110
Schools	0.6%	14.1%	$0.94	1.68	-0.0183
Grocery Stores	2.0%	14.9%	$3.27	9.29	-0.0656
Health Care	7.3%	11.8%	$1.36	1.01	-0.0425
Lodging	-6.2%	6.3%	$1.01	3.54	-0.0037
Large Office	5.6%	12.6%	$0.78	0.99	-0.0121
Misc.	5.9%	11.5%	$1.28	1.13	-0.0185
Restaurants	-1.0%	7.5%	$6.03	5.58	0.1604
Retail	11.9%	16.1%	$1.73	1.25	-0.0257
Small Office	6.3%	16.7%	$0.98	1.45	-0.0105
Warehouse	18.1%	21.1%	$0.26	0.14	-0.0010
All	**7.0%**	**14.6%**	**$0.82**	**1.03**	**-0.0119**

CNC - Energy Savings and Costs by Building Type

25% Above 2001 Standards – Climate Zones 6-7

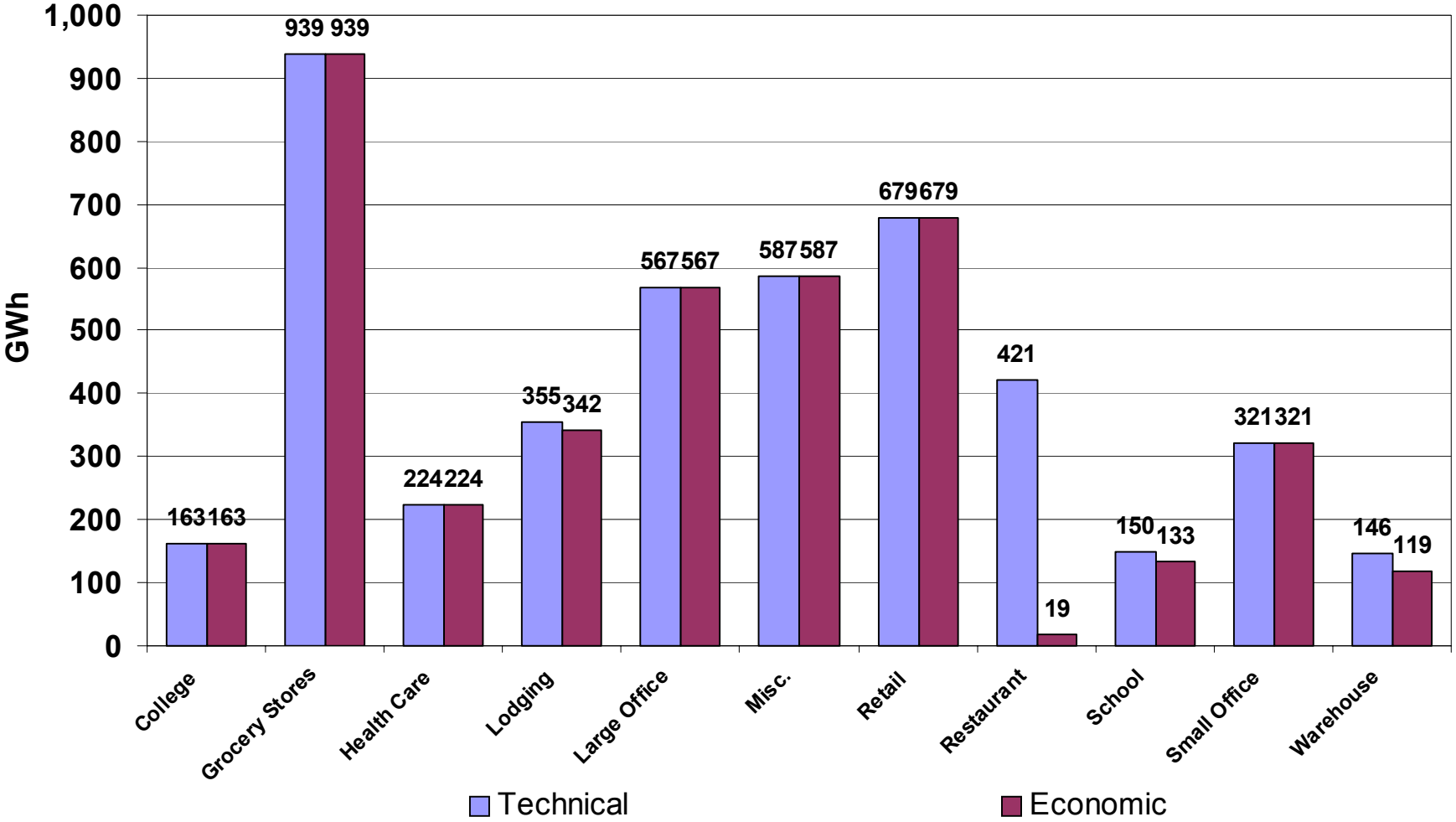
Building Type	Base Compliance	Package Compliance	Cost ($/SF)	Electricity Savings (kWh/SF)	Gas Savings (therm/SF)
College	4.3%	24.3%	$0.63	2.64	0.0429
Schools	6.8%	22.7%	-$0.33	1.49	0.0144
Grocery Stores	0.9%	31.7%	$3.78	16.35	0.0162
Health Care	3.2%	19.9%	-$0.14	4.62	0.0254
Lodging	0.1%	1.6%	$1.17	1.08	0.0000
Large Office	8.2%	25.5%	-$2.16	1.87	0.0382
Misc.	5.5%	13.9%	$0.05	2.23	0.0306
Restaurants	0.1%	12.1%	$16.47	9.34	0.9094
Retail	6.3%	22.3%	-$0.05	2.95	0.0101
Small Office	-1.1%	16.9%	-$4.38	4.09	0.0108
Warehouse	24.1%	37.5%	$0.26	0.34	0.0001
All	**4.5%**	**19.0%**	**-$0.95**	**2.55**	**0.0234**

CNC - Energy Savings and Costs by Building Type

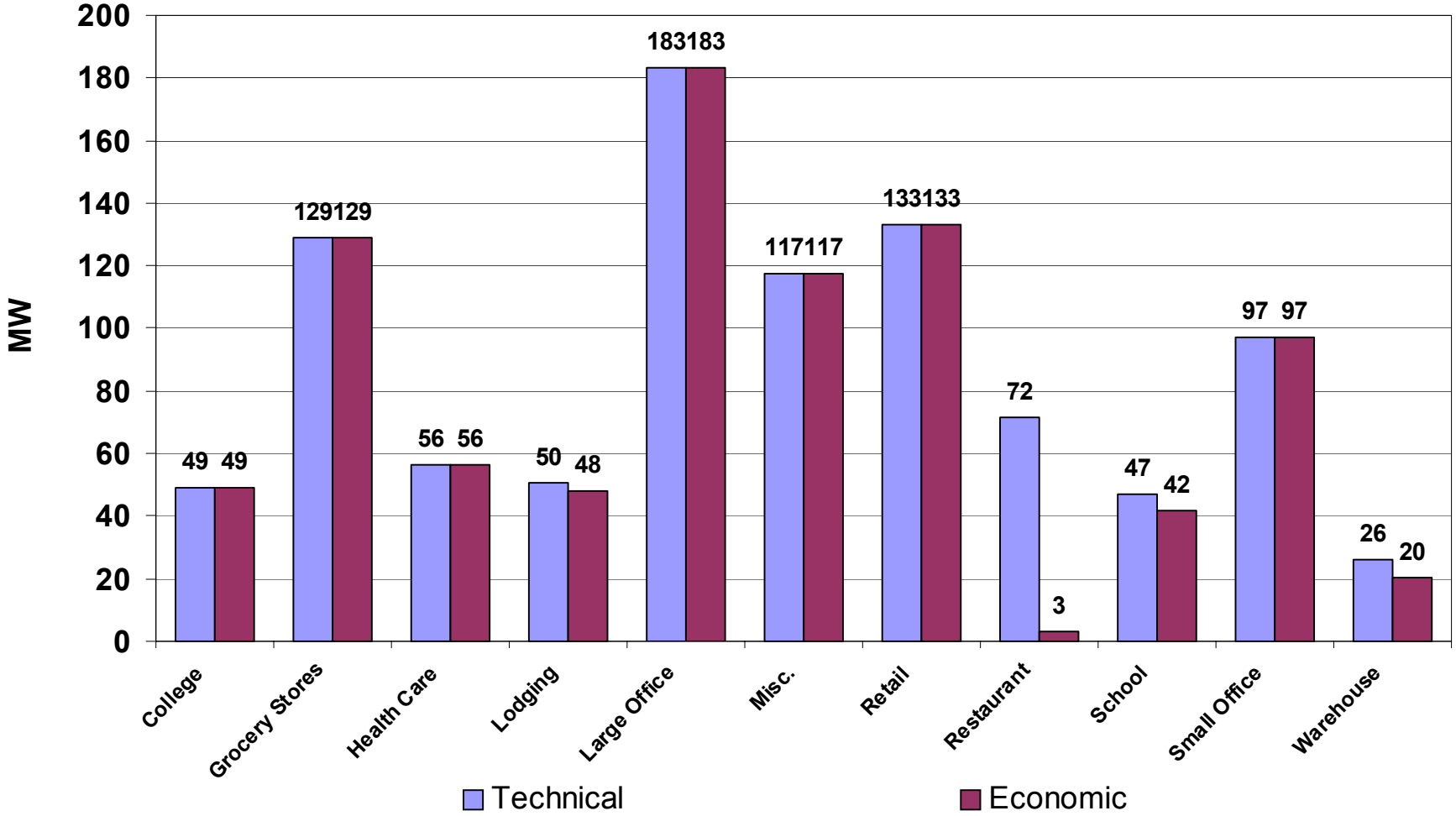
25% Above 2001 Standards – Climate Zones 11-15

Building Type	Base Compliance	Package Compliance	Cost ($/SF)	Electricity Savings (kWh/SF)	Gas Savings (therm/SF)
College	1.9%	23.9%	$0.70	3.47	0.0150
Schools	0.6%	19.0%	$0.90	2.04	0.0015
Grocery Stores	2.0%	28.4%	$4.15	17.44	0.0309
Health Care	7.3%	24.6%	$0.31	1.89	0.0424
Lodging	-6.2%	10.6%	$0.87	4.68	0.0029
Large Office	5.6%	18.4%	-$0.06	1.47	0.0128
Misc.	5.9%	19.2%	$0.84	2.02	0.0235
Restaurants	-1.0%	8.9%	$5.73	6.72	0.1642
Retail	11.9%	22.1%	-$0.78	2.33	0.0116
Small Office	6.3%	22.1%	$0.42	1.98	0.0075
Warehouse	18.1%	25.1%	$0.26	0.29	0.0006
All	**7.0%**	**21.4%**	**$0.38**	**1.63**	**0.0092**

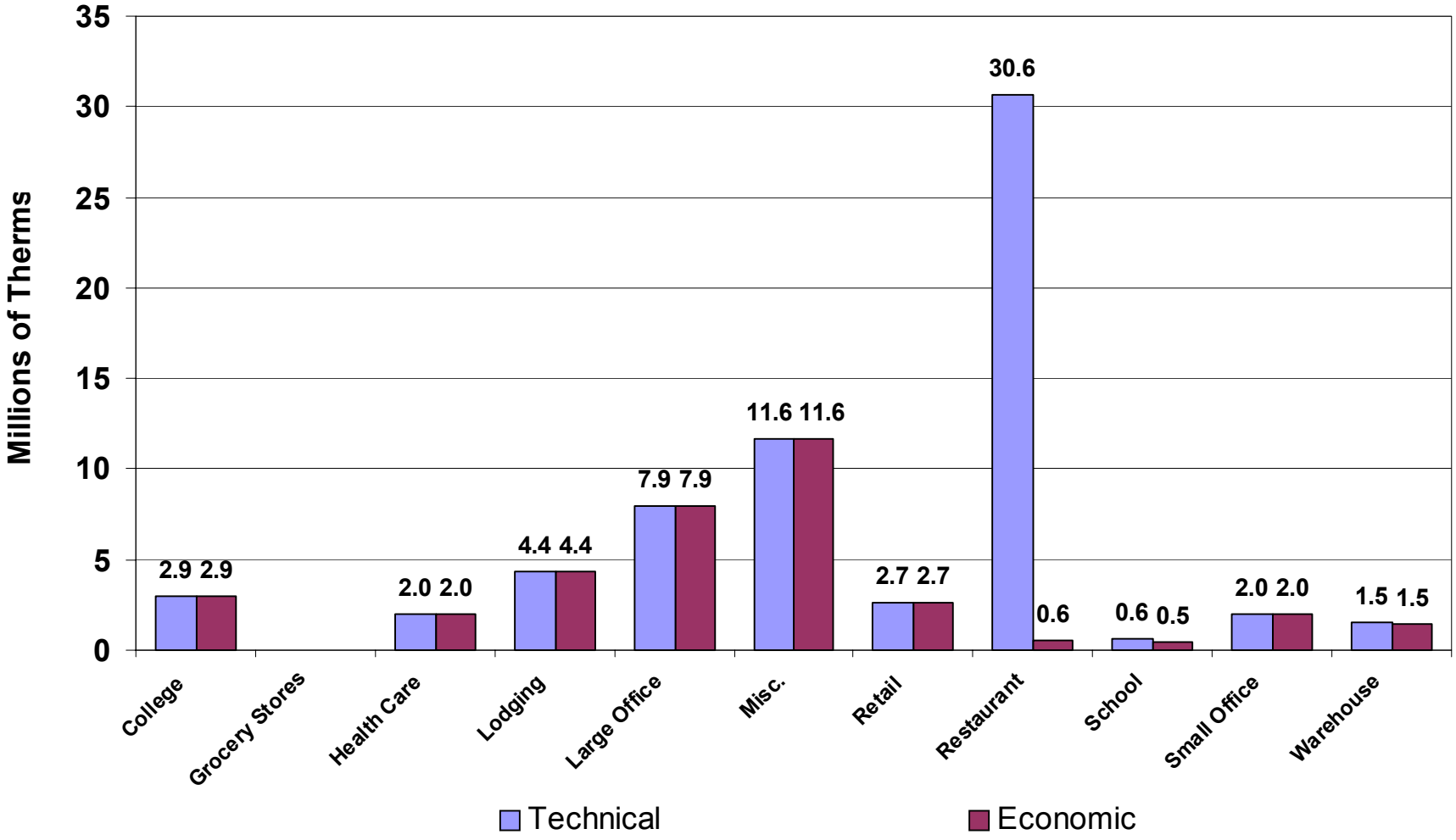
CNC - Technical and Economic Energy Potential – by Building Type



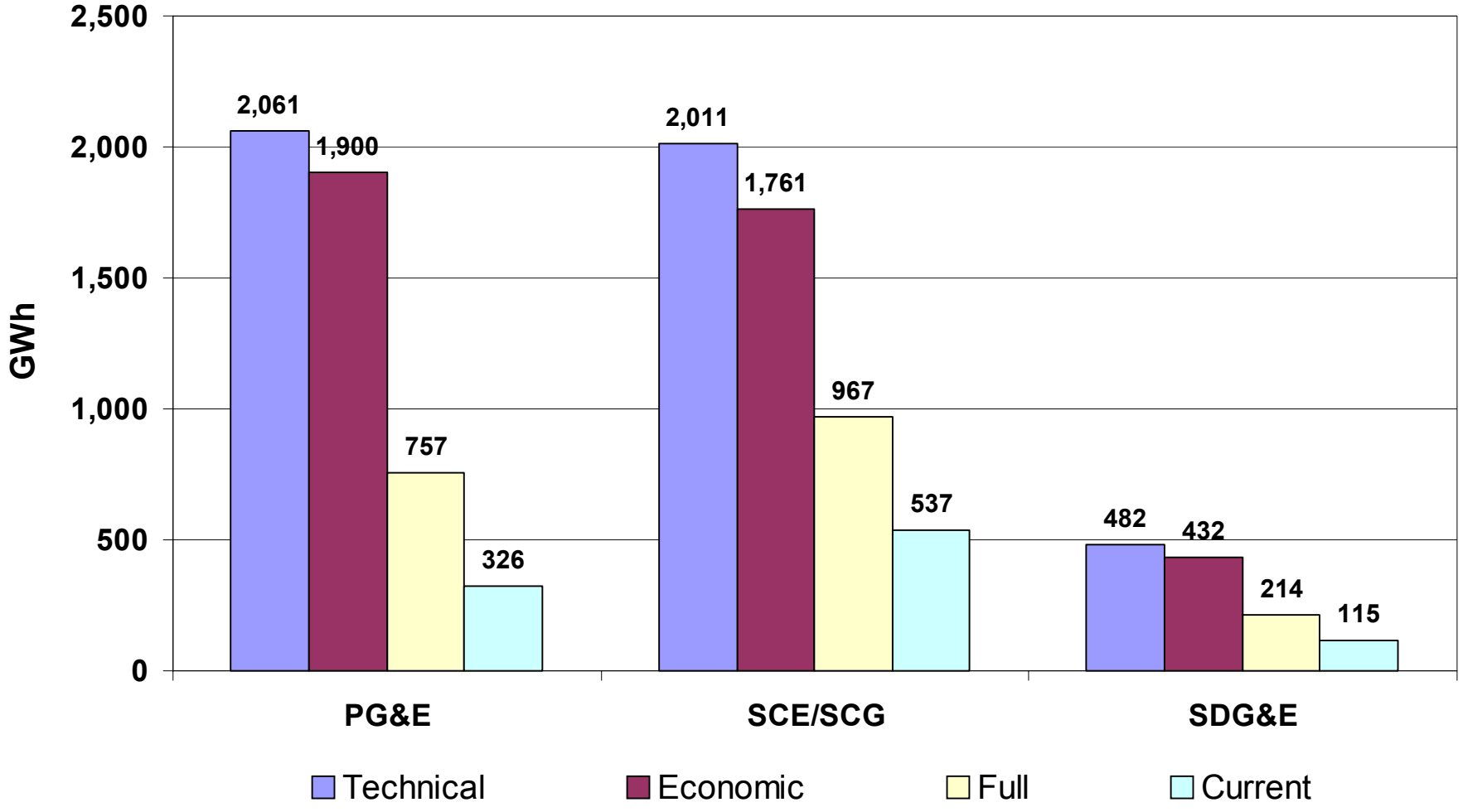
CNC - Technical and Economic Demand Potential – by Building Type



CNC - Technical and Economic Gas Potential – by Building Type



CNC - Energy Potential – by IOU



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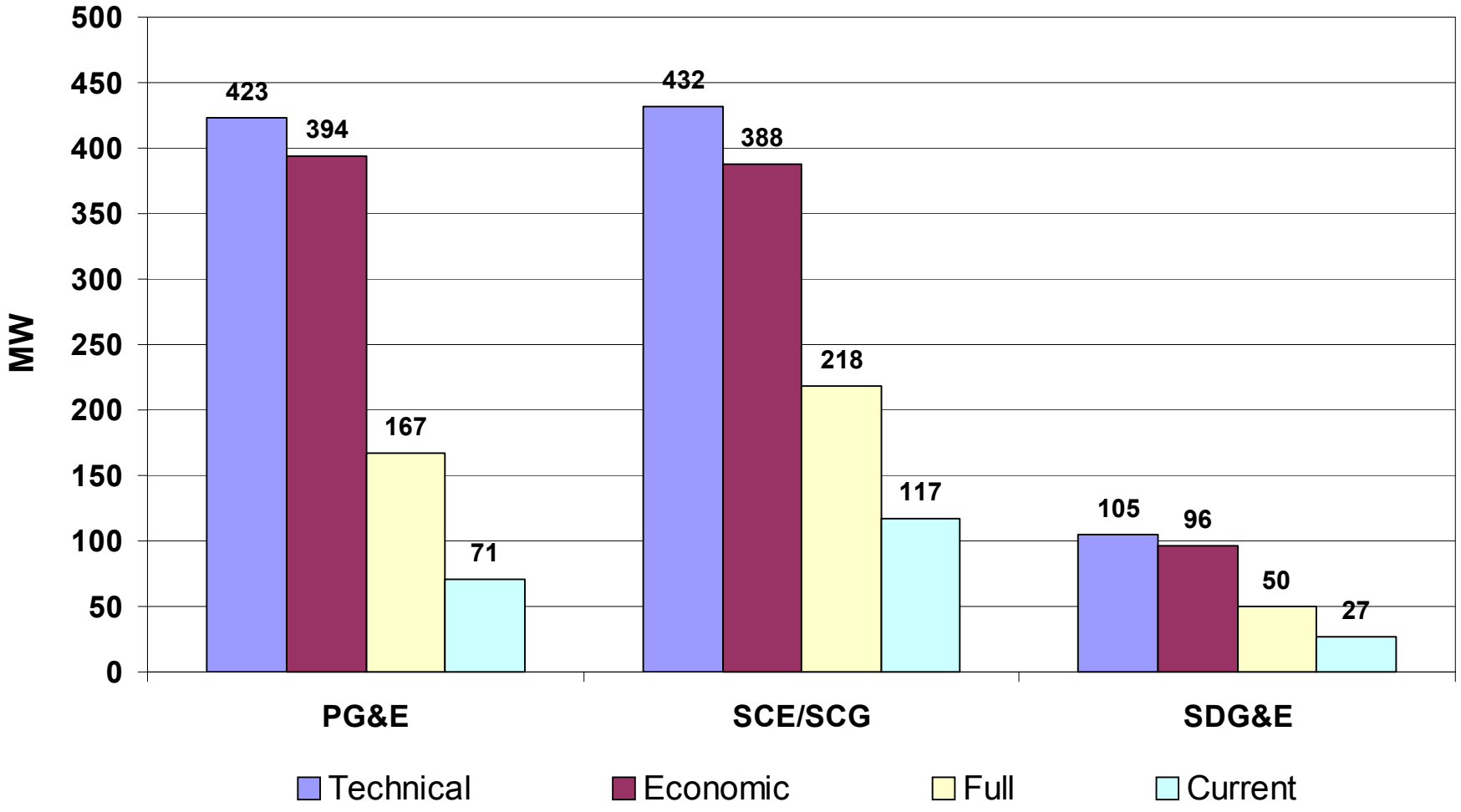
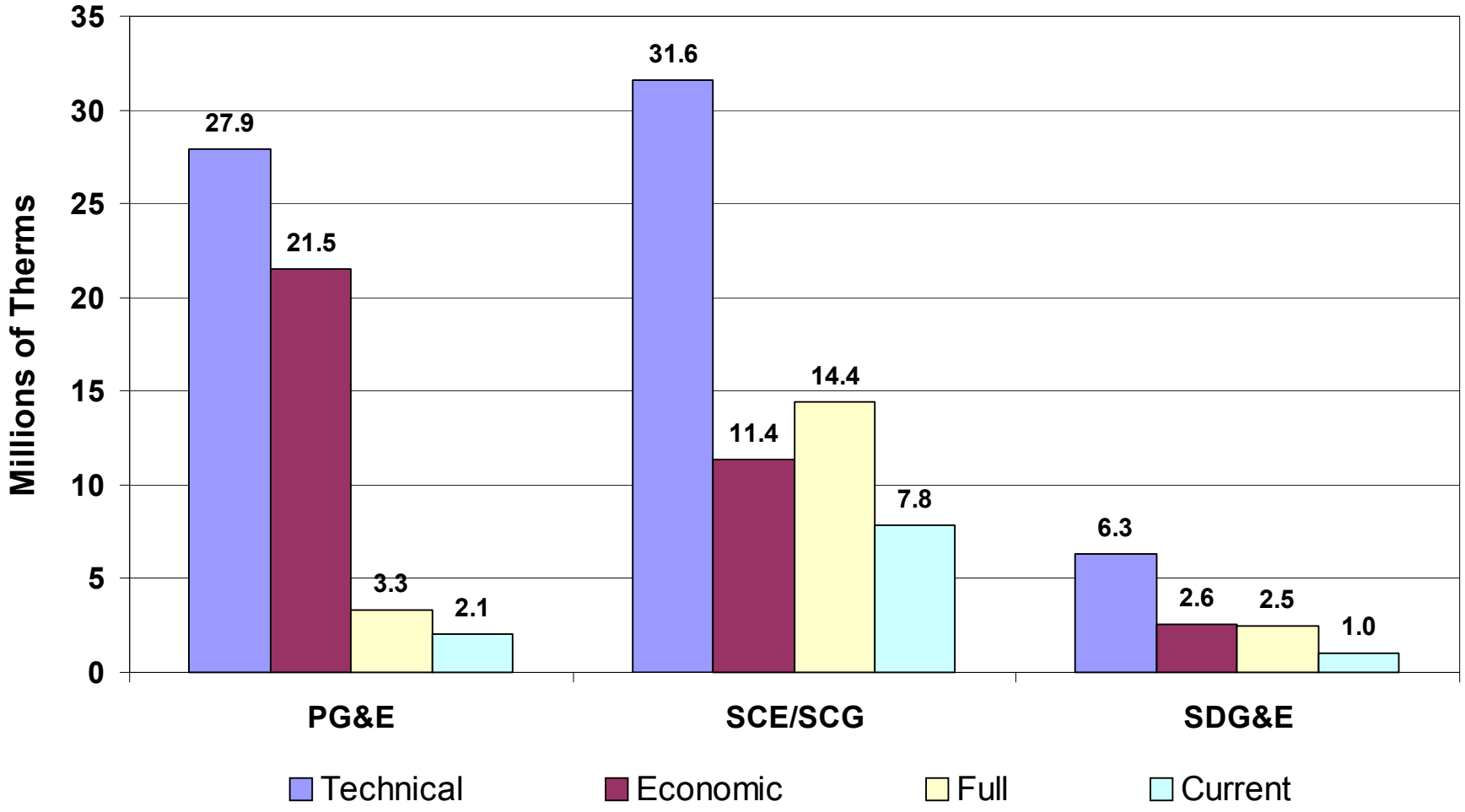


CNC - Gas Potential – by IOU



CNC - Costs and Benefits

Item	Current	Full
Gross Program Costs	$22,735,023	$42,103,565
Net Measure Costs	$198,202,027	$581,590,369
Gross Incentives	$81,972,156	$1,011,373,671
Net Avoided Cost Benefit	$425,327,893	$815,655,507
Program TRC	**1.93**	**1.31**

CNC - Costs and Benefits – Current Incentive

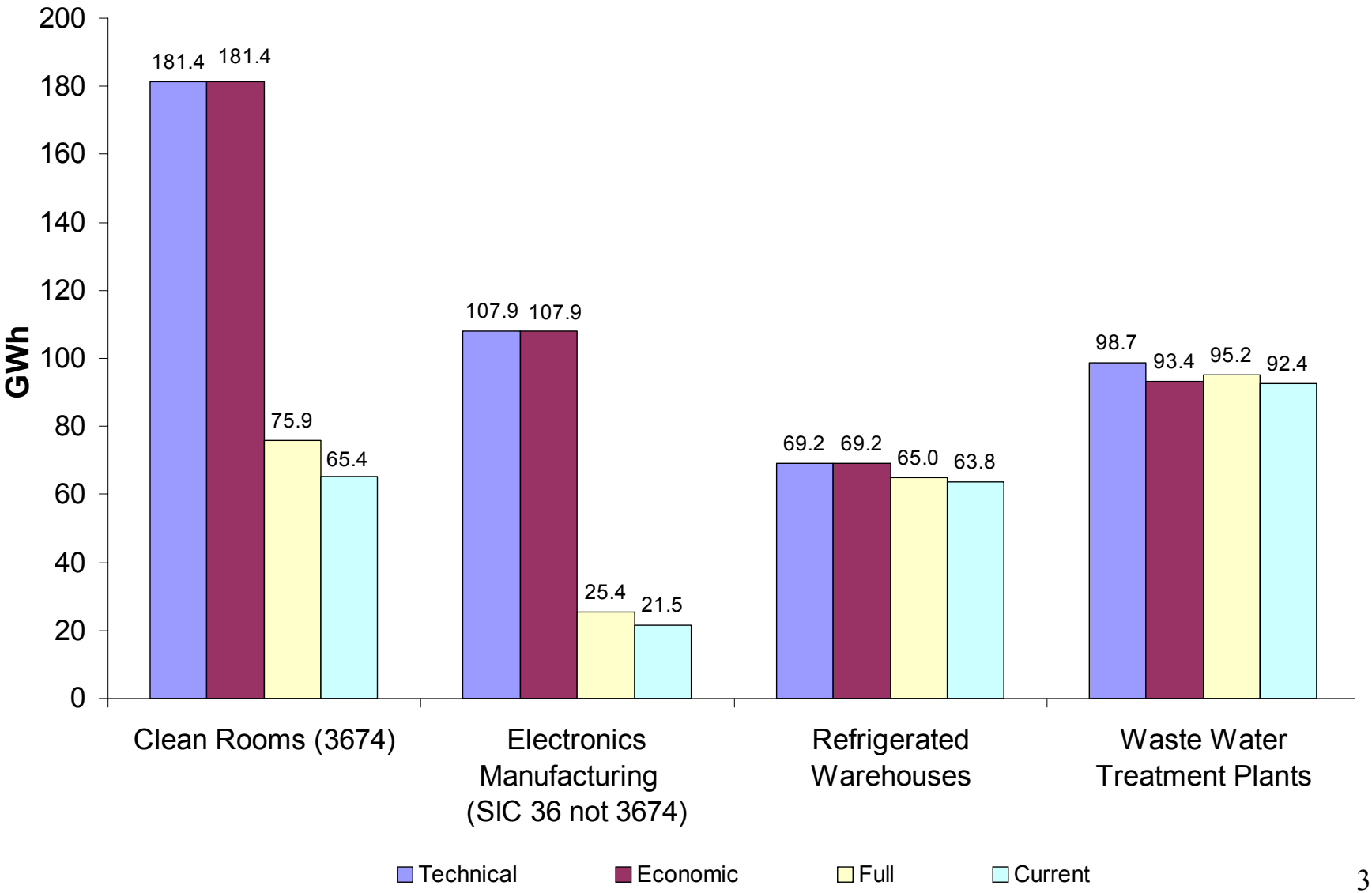
Item	PG&E	SCE/ SoCalGas	SDG&E
Gross Program Costs	$10,290,134	$9,786,217	$2,658,672
Net Measure Costs	$51,266,901	$129,255,497	$17,679,629
Gross Incentives	$25,755,700	$46,576,709	$9,639,747
Net Avoided Cost Benefit	$136,893,088	$234,206,874	$54,227,931
Program TRC	**2.22**	**1.68**	**2.67**

Potential in Newly Constructed Industrial Buildings

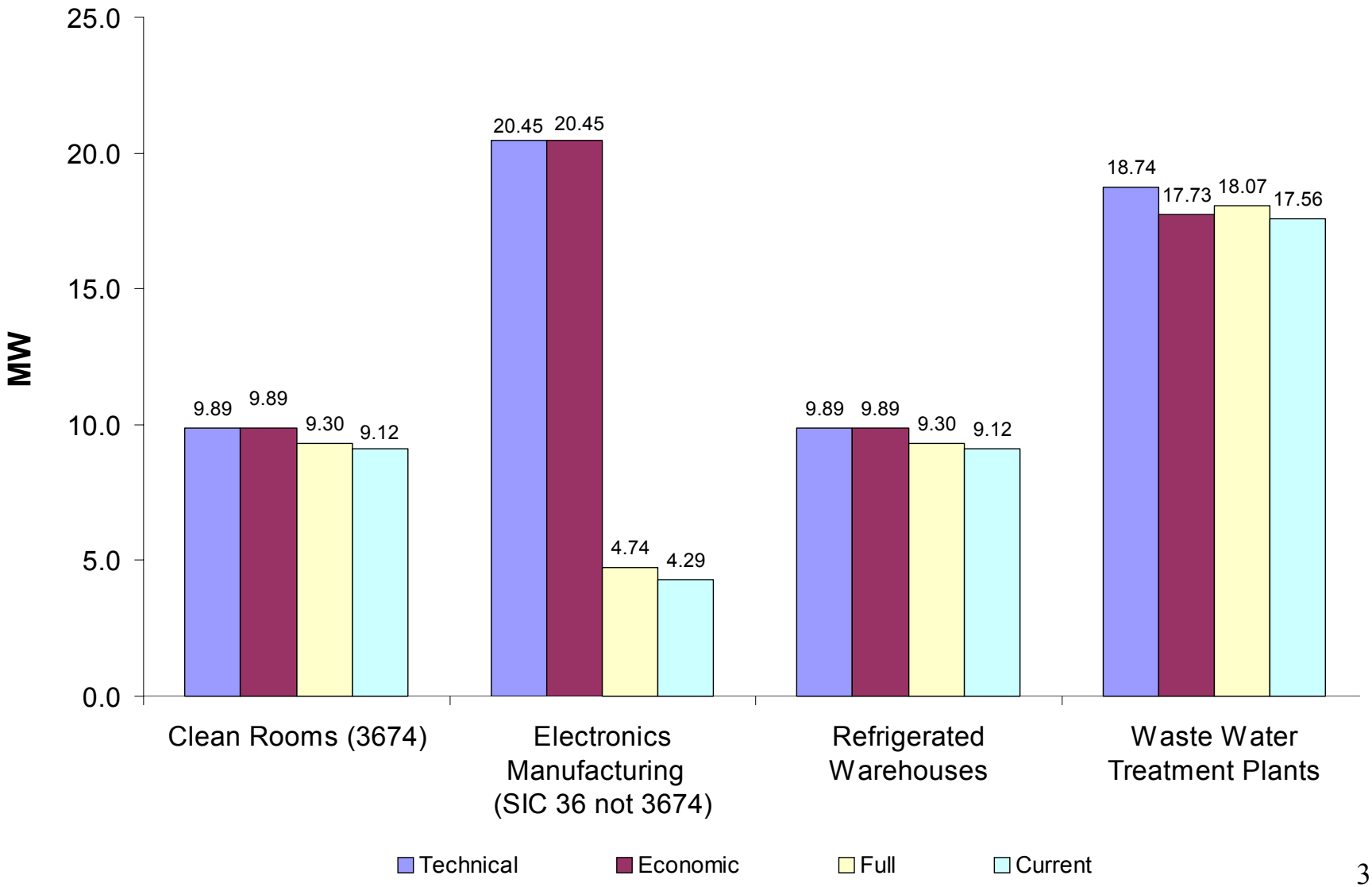
INC - Measures Included in Analysis

- INC potential was estimated using a combination of individual measures and packages of measures.
  - For those building types for which packages were used, they were developed to get industrial buildings to meet the same efficiency levels as CNC.
  - Since SBD allows for individual measures to be incentivized, INC includes many individual measures is the potential analysis.
- Measures vary by the four industrial categories included in the analysis:
  - wastewater treatment,
  - refrigerated warehouses, and
  - electronics manufacturing, which was split into two groups
    - clean rooms (SIC 3674, semiconductor manufacturing)
    - conventional facilities, which included the remainder of the SIC 36 load increase (hereafter referred to as 36x).
- RLW conducted the building simulations using DOE 2.1.

INC - Energy Potential – by Building Type



INC - Demand Potential – by Building Type



INC - Costs and Benefits

Item	Current	Full
Gross Program Costs	$5,647,484	$6,059,520
Net Measure Costs	$29,801,325	$32,817,078
Gross Incentives	$9,233,838	$32,975,470
Net Avoided Cost Benefit	$94,816,732	$101,487,129
Program TRC	**2.67**	**2.61**

The results of the New Construction Potential analysis are part of the

***California Energy Efficiency Potential Study May 2006.* Itron, et al**

Posted on www.CALMAC.org

Jean Shelton, PhD
Jean.Shelton@Itron.com
858-724-2620

Rachel Harcharik
Rachel. Harcharik @Itron.com