

FORECAST 20
Electricity Savings in Vermont from 20 Years of
Continued End-Use Efficiency Investment

Appendix 2
Residential Sector Analysis

- a. Residential Measure Characteristics
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Appendix 2

Residential Sector Analysis

- a. Residential Measure Characteristics

F-20 RES Measure Characteristics

| Measure Name | Measure Description | Measure Baseline | Source of Measure Characteristic | Measure ID1 Sector | Measure ID3 Program | Measure ID5 (e.g., End Use) | Measure Life (years) | Incremental Installed Cost (Full Cost for Retrofit) (2009\$) | Electric Utility Customer Incentive (2009\$) | Incentive as Percent of Incremental Cost | Annual kWh Saved or Generated | Maximum Load Reduction or Generated (kW) | Load Shape (choose from drop-down, right-click to view the Load Shape) |
|--|---|--|--|--------------------|------------------------------|-----------------------------|----------------------|--|--|--|-------------------------------|--|--|
| Shell_Heat_No Cool_DHW_SFD_Tier1 | New single family detached home without central cooling meeting Tier 1 standard (HERS 81-85) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 431 | | 0% | 25 | 0.0 | Res Space heat |
| Shell_Heat_No Cool_DHW_SFD_Tier2 | New single family detached home without central cooling meeting Tier 2 standard (HERS 61-80) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 949 | | 0% | 115 | 0.1 | Res Space heat |
| Shell_Heat_No Cool_DHW_SFD_Tier3 | New single family detached home with out central cooling meeting Tier 3 standard (HERS 0-60) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 9,600 | | 0% | 162 | 0.2 | Res Space heat |
| Shell_Heat_Cool_DHW_SFD_Tier1 | New single family detached home with central cooling meeting Tier 1 standard (HERS 81-85) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 431 | | 0% | 79 | 0.3 | Res Blended Space Heat and A/C |
| Shell_Heat_Cool_DHW_SFD_Tier2 | New single family detached home with central cooling meeting Tier 2 standard (HERS 61-80) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 949 | | 0% | 489 | 2.0 | Res Blended Space Heat and A/C |
| Shell_Heat_Cool_DHW_SFD_Tier3 | New single family detached home with central cooling meeting Tier 3 standard (HERS 0-60) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 9,600 | | 0% | 551 | 2.1 | Res Blended Space Heat and A/C |
| Shell_Heat_No Cool_DHW_SFA_Tier1 | New single family detached home without central cooling meeting Tier 1 standard (HERS 81-85) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 431 | | 0% | 19 | 0.0 | Res Space heat |
| Shell_Heat_No Cool_DHW_SFA_Tier2 | New single family detached home with out central cooling meeting Tier 2 standard (HERS 61-80) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 949 | | 0% | 80 | 0.1 | Res Space heat |
| Shell_Heat_No Cool_DHW_SFA_Tier3 | New single family attached home with out central cooling meeting Tier 3 standard (HERS 0-60) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/DHW | 25 | 9,600 | | 0% | 190 | 0.2 | Res Space heat |
| Shell_Heat_Cool_DHW_SFA_Tier1 | New single family attached home with out central cooling meeting Tier 1 standard (HERS 81-85) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 431 | | 0% | 54 | 0.2 | Res Blended Space Heat and A/C |
| Shell_Heat_Cool_DHW_SFA_Tier2 | New single family attached home with out central cooling meeting Tier 2 standard (HERS 61-80) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 949 | | 0% | 213 | 0.8 | Res Blended Space Heat and A/C |
| Shell_Heat_Cool_DHW_SFA_Tier3 | New single family attached home with central cooling meeting Tier 3 standard (HERS 0-60) | The Vermont Residential Building Energy Standard (RBES) | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Heating/Cooling/DHW | 25 | 9,600 | | 0% | 730 | 2.9 | Res Blended Space Heat and A/C |
| Central AC_Tier 2 Upgrade | Installation of Central AC meeting CEE Tier 2 standards | Federal appliance standards | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Residential New Construction | Cooling | 14 | 96 | 100 | 104% | 138 | 0.4 | Res A/C |
| Dishwasher_ENERGY STAR | Purchase of ENERGY STAR dishwasher | Federal minimum standard | ENERGY STAR website | Lost Opp | Residential New Construction | Kitchen/Laundry | 13 | 27 | 400 | 1481% | 31 | 0.0 | Res DHW conserve |
| Clothes Washer_ENERGY STAR | Purchase of ENERGY STAR Clothes washer | Federal appliance standards | EVT TRM Portfolio Update No. 56 (pending app) | Lost Opp | Residential New Construction | Kitchen/Laundry | 14 | 600 | 50 | 8% | 189 | 0.6 | Res Clothes Washer |
| Clothes Dryer_Estar_Fuel Switch | Purchase of a fossil fuel based clothes dryer meeting specified efficiency criteria replacing a an electric clothes dryer | Electric clothes dryer | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Residential New Construction | Clothes Fuel Switch | 14 | 260 | 50 | 19% | 977.00 | 4.07 | Res Clothes Washer |
| Refrigerator_ENERGY STAR | Purchase of ENERGY STAR refrigerator | Minimum federal standard Refrigerator | EVT TRM User Manual No. 2009-55 | Lost Opp | Residential New Construction | Refrigeration | 17 | 95 | 400 | 421% | 117 | 0.0 | Res Refrigerator |
| Refrigerator_Tier2 | Purchase of Tier 2 refrigerator | Minimum federal standard Refrigerator | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Residential New Construction | Refrigeration | 17 | 140 | 400 | 286% | 147 | 0.0 | Res Refrigerator |
| Split Furnace Fan_Heating | ECM fan motor | Permanent Split Capacitor Motor | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Residential New Construction | Space Heating | 18 | 200 | 100 | 50% | 393 | 0.3 | Res Furnace Fan Heating and Cooling |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Single Speed Pool Pump Motor with timer | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Residential New Construction | Other Appliances | 10 | 450 | 300 | 67% | 1,245 | 0.9 | Res Pool Pump Replacement |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Single Speed Pool Pump Motor without timer | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Residential New Construction | Other Appliances | 10 | 80 | 80 | 100% | 1,324 | 1.2 | Res Pool Pump Timer |
| Heat Pump Dryer | Purchase of Heat Pump Clothes Dryer | Standard resistance heater clothes dryer | Best estimates of Efficiency Vermont and Clothes Dryer TRM from EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Residential New Construction | Kitchen/Laundry | 14 | 300 | 50 | 17% | 489 | 2.0 | Res Clothes Washer |
| CFL - spiral 2009 | ENERGY STAR qualified CFL spiral purchased in 2009 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 8 | 6 | 2 | 38% | 45 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2010 | ENERGY STAR qualified CFL spiral purchased in 2010 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 9 | 4 | 2 | 41% | 39 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2011 | ENERGY STAR qualified CFL spiral purchased in 2011 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 12 | 3 | 1 | 59% | 30 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2012 | ENERGY STAR qualified CFL spiral purchased in 2012 | Incandescent light bulb, new incandescent standard for 100W bulb to max 72W (average 69W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 12 | 3 | 1 | 31% | 28 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2013 | ENERGY STAR qualified CFL spiral purchased in 2013 | Incandescent light bulb, new incandescent standard for 75W bulb to max 63W (average 61.8W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 12 | 2 | 1 | 57% | 23 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2014 | ENERGY STAR qualified CFL spiral purchased in 2014 | Incandescent light bulb, new incandescent standard for 60W bulb to max 43W (average 56.2W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 12 | 1 | 1 | 56% | 20 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2009-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2014 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 5 | 2 | 45% | 54 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 4 | 2 | 45% | 49 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2017-2019 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 3 | 2 | 77% | 37 | 0.0 | Res Indoor Lighting |
| CFL - specialty >15W, 2009-2014 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 4 | 3 | 66% | 87 | 0.1 | Res Indoor Lighting |
| CFL - specialty >15W, 2015-2016 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 3 | 2 | 64% | 79 | 0.1 | Res Indoor Lighting |
| CFL - specialty >15W, 2017-2019 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 7 | 1 | 2 | 225% | 59 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2009 | High efficiency LED Lamp purchased in 2009 | Blend of Incandescent and CFL and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 20 | 75 | 26 | 35% | 38 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2010 - 2011 | High efficiency LED Lamp purchased in 2010-2011 | Blend of Incandescent and CFL and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 20 | 50 | 27 | 54% | 39 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Blend of Incandescent, halogen and CFL (2012-2014), just CFL (2015 on) and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Residential New Construction | Indoor Lighting | 20 | 24 | 20 | 84% | 32 | 0.0 | Res Indoor Lighting |
| Eff. Generic Fixture | ENERGY STAR Pin Based Fixture | Incandescent | Aggregated participant data from EVT RNC Program | Lost Opp | Residential New Construction | Indoor Lighting | 20 | 30 | 5 | 17% | 190 | 0.2 | Res Indoor Lighting |
| CFL - spiral 2008 (Res) | ENERGY STAR qualified CFL spiral purchased in 2008 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 6 | 6 | 2 | 36% | 44 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2009 (Res) | ENERGY STAR qualified CFL spiral purchased in 2009 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 8 | 6 | 2 | 38% | 45 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2010 (Res) | ENERGY STAR qualified CFL spiral purchased in 2010 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 9 | 4 | 2 | 41% | 26 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2011 (Res) | ENERGY STAR qualified CFL spiral purchased in 2011 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 12 | 3 | 1 | 59% | 13 | 0.0 | Res Indoor Lighting |

| Measure Name | Existing Equipment Life (years) | Existing Equipment Age (years) | New Baseline Inst. Cost (2009\$) | Electric Savings Adjustment (ultimate saved kWh/1st year kWh) (%) | Fossil Fuel Savings Adjustment (ultimate saved MMBtu/1st year MMBtu) (%) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Water (CCF/yr) | Operation and Maintenance | |
|--|---------------------------------|--------------------------------|----------------------------------|---|--|--|---|--|---|--|---|----------------|--|---|
| | | | | | | | | | | | | | Baseline Equipment Component 1 | |
| | | | | | | | | | | | | | Component 1 Life or Maint. Frequency (years) | Component 1 Replacement or Maint. Cost (2009\$) |
| Shell_Heat_No Cool_DHW_SFD_Tier1 | | | | | | Res Distillate | 1.3 | Res NG | 1.6 | Res High-Use LPG | 3.7 | | | |
| Shell_Heat_No Cool_DHW_SFD_Tier2 | | | | | | Res Distillate | 6.2 | Res NG | 7.5 | Res High-Use LPG | 18.1 | | | |
| Shell_Heat_No Cool_DHW_SFD_Tier3 | | | | | | Res Distillate | 8.8 | Res NG | 10.7 | Res High-Use LPG | 25.7 | | | |
| Shell_Heat_Cool_DHW_SFD_Tier1 | | | | | | Res Distillate | 1.3 | Res NG | 1.6 | Res High-Use LPG | 3.7 | | | |
| Shell_Heat_Cool_DHW_SFD_Tier2 | | | | | | Res Distillate | 6.2 | Res NG | 7.5 | Res High-Use LPG | 18.1 | | | |
| Shell_Heat_Cool_DHW_SFD_Tier3 | | | | | | Res Distillate | 8.8 | Res NG | 10.7 | Res High-Use LPG | 25.7 | | | |
| Shell_Heat_No Cool_DHW_SFA_Tier1 | | | | | | Res Distillate | 0.0 | Res NG | 2.9 | Res High-Use LPG | 2.4 | | | |
| Shell_Heat_No Cool_DHW_SFA_Tier2 | | | | | | Res Distillate | 0.2 | Res NG | 13.5 | Res High-Use LPG | 11.2 | | | |
| Shell_Heat_No Cool_DHW_SFA_Tier3 | | | | | | Res Distillate | 0.5 | Res NG | 29.7 | Res High-Use LPG | 24.5 | | | |
| Shell_Heat_Cool_DHW_SFA_Tier1 | | | | | | Res Distillate | 0.0 | Res NG | 2.9 | Res High-Use LPG | 2.4 | | | |
| Shell_Heat_Cool_DHW_SFA_Tier2 | | | | | | Res Distillate | 0.2 | Res NG | 13.5 | Res High-Use LPG | 11.2 | | | |
| Shell_Heat_Cool_DHW_SFA_Tier3 | | | | | | Res Distillate | 0.5 | Res NG | 29.7 | Res High-Use LPG | 24.5 | | | |
| Central AC_Tier 2 Upgrade | | | | | | | | | | | | | | |
| Dishwasher ENERGY STAR | | | | | | Res Distillate | 0.1 | Res NG | 0.1 | Res High-Use LPG | 0.2 | 1.2 | | |
| Clothes Washer ENERGY STAR | | | | | | Res Distillate | 0.1 | Res NG | 0.1 | Res High-Use LPG | 0.1 | 6.2 | | |
| Clothes Dryer_Estar_Fuel Switch | | | | | | | | Res NG | -1.1 | Res High-Use LPG | -2.3 | | | |
| Refrigerator_ENERGY STAR | | | | | | | | | | | | | | |
| Refrigerator_Tier2 | | | | | | | | | | | | | | |
| Eff Furnace Fan_Heating | | | | | | | | | | | | | | |
| Pool Pumps - Single Spd to 2speed/Variable | | | | | | | | | | | | | | |
| Pool Pump Timer (Baseline pool pump) | | | | | | | | | | | | | | |
| Heat Pump Dryer | | | | | | | | | | | | | | |
| CFL - spiral 2009 | | | | | | | | | | | | | 1.17 | 0.78 |
| CFL - spiral 2010 | | | | | | | | | | | | | 1.52 | 0.84 |
| CFL - spiral 2011 | | | | | | | | | | | | | 1.52 | 0.90 |
| CFL - spiral 2012 | | | | | | | | | | | | | 1.52 | 0.95 |
| CFL - spiral 2013 | | | | | | | | | | | | | 1.52 | 0.99 |
| CFL - spiral 2014 | | | | | | | | | | | | | 0.81 | 2.55 |
| CFL - specialty <=15W, 2009-2014 | | | | | | | | | | | | | 0.81 | 3.00 |
| CFL - specialty <=15W, 2015-2016 | | | | | | | | | | | | | 0.81 | 4.00 |
| CFL - specialty <=15W, 2017-2019 | | | | | | | | | | | | | 0.81 | 4.03 |
| CFL - specialty >15W, 2009-2014 | | | | | | | | | | | | | 0.81 | 4.24 |
| CFL - specialty >15W, 2015-2016 | | | | | | | | | | | | | 0.81 | 4.67 |
| CFL - specialty >15W, 2017-2019 | | | | | | | | | | | | | 5.30 | 2.00 |
| SSL lamp, 2009 | | | | | | | | | | | | | 6.10 | 1.50 |
| SSL lamp, 2010 - 2011 | | | | | | | | | | | | | 7.89 | 1.00 |
| SSL lamp, 2012 on | | | | | | | | | | | | | | |
| Eff. Generic Fixture | | | | | | | | | | | | | | |
| CFL - spiral 2008 (Res) | | | | | | | | | | | | | 0.81 | 0.91 |
| CFL - spiral 2009 (Res) | | | | | | | | | | | | | 1.02 | 1.14 |
| CFL - spiral 2010 (Res) | | | | | | | | | | | | | 1.17 | 1.33 |
| CFL - spiral 2011 (Res) | | | | | | | | | | | | | 1.52 | 1.52 |

F-20 RES Measure Characteristics

| Measure Name | Measure Description | Measure Baseline | Source of Measure Characteristic | Measure ID1 Sector | Measure ID3 Program | Measure ID5 (e.g., End Use) | Measure Life (years) | Incremental Installed Cost (Full Cost for Retrofit) (2009\$) | Electric Utility Customer Incentive (2009\$) | Incentive as Percent of Incremental Cost | Annual kWh Saved or Generated | Maximum Load Reduction or Generated (kW) | Load Shape (choose from drop-down, right-click to view the Load Shape) |
|---|--|--|--|--------------------|---------------------|-----------------------------|----------------------|--|--|--|-------------------------------|--|--|
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Incandescent light bulb, new incandescent standard for 100W bulb to max 72W (average 69W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 12 | 3 | 1 | 31% | 21 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Incandescent light bulb, new incandescent standard for 75W bulb to max 63W (average 61.8W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 12 | 2 | 1 | 57% | 17 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Incandescent light bulb, new incandescent standard for 60W bulb to max 43W (average 56.2W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 12 | 1 | 1 | 56% | 14 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2012-2014 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 5 | 2 | 46% | 42 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2015-2016 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 5 | 2 | 43% | 37 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2017-2019 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 3 | 2 | 68% | 29 | 0.0 | Res Indoor Lighting |
| CFL - specialty >15W, 2012-2014 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 4 | 3 | 68% | 42 | 0.1 | Res Indoor Lighting |
| CFL - specialty >15W, 2015-2016 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 4 | 2 | 66% | 60 | 0.0 | Res Indoor Lighting |
| CFL - specialty >15W, 2017-2019 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 2 | 2 | 91% | 46 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2009 | High efficiency LED Lamp purchased in 2009 | Blend of Incandescent and CFL and Residential and Commercial installation | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 20 | 75 | 26 | 35% | 73 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2010 - 2011 | High efficiency LED Lamp purchased in 2010-2011 | Blend of Incandescent and CFL and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 20 | 50 | 27 | 54% | 75 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Blend of Incandescent, halogen and CFL (2012-2014), just CFL (2015 on) and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 20 | 24 | 20 | 84% | 61 | 0.0 | Res Indoor Lighting |
| Lighting Controls | Installation of Lighting Controls for Residential Indoor Lighting | No lighting controls | Best estimates by Efficiency Vermont Lighting Market Manager and CA Title 24 study (http://www.energy.ca.gov/title24/standards/archives/rulemaking/documents/2003-07-11_400-03-014.PDF) | Lost Opp | Retail Products | Indoor Lighting | 10 | 30 | 5 | 17% | 15 | 0.1 | Res Indoor Lighting |
| Outdoor Lighting Controls | Installation of Lighting Controls for Residential Outdoor Lighting | No lighting controls | Best estimates by Efficiency Vermont Lighting Market Manager and CA Title 24 study (http://www.energy.ca.gov/title24/standards/archives/rulemaking/documents/2003-07-11_400-03-014.PDF) | Lost Opp | Retail Products | Outdoor Lighting | 3 | 0 | 0 | #DIV/0! | 0 | 2.0 | Res Outdoor Lighting |
| Clothes washers - Tier 2, 2008 | Purchase of a CEE Tier 2 qualified Clothes Washer | Federal standard MEF (Modified Energy Factor) inflated 10% | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Other Appliances | 14 | 600 | 50 | 8% | 189 | 0.6 | Res Clothes Washer |
| Clothes washers - Tier 3, 2009 on | Purchase of a CEE Tier 3 qualified Clothes Washer | Federal standard MEF (Modified Energy Factor) inflated 20% | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Other Appliances | 14 | 375 | 50 | 13% | 172 | 0.6 | Res Clothes Washer |
| Heat Pump Dryer | Purchase of Heat Pump Clothes Dryer | Standard resistance heater clothes dryer | Best estimates of Efficiency Vermont and Clothes Dryer TRM from EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Other Appliances | 14 | 300 | 50 | 17% | 489 | 2.0 | Res Clothes Washer |
| Refrigerator - ENERGY STAR | Purchase of ENERGY STAR refrigerator | Minimum federal standard Refrigerator | EVT TRM User Manual No. 2009-53 | Lost Opp | Retail Products | Refrigeration | 17 | 95 | 25 | 26% | 117 | 0.0 | Res Refrigerator |
| Refrigerator - Tier 2 | Purchase of Tier 2 refrigerator | Minimum federal standard Refrigerator | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Refrigeration | 17 | 140 | 40 | 29% | 146 | 0.0 | Res Refrigerator |
| Freezer - ENERGY STAR | Purchase of ENERGY STAR freezer | Minimum federal standard Freezer | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Refrigeration | 16 | 30 | 25 | 83% | 57 | 0.0 | Res Refrigerator |
| Refrigerator/freezer second unit turn-in | Retiring and disposing of an existing second refrigerator | Existing second refrigerator | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Retail Products | Refrigeration | 8 | 120 | 150 | 125% | 1,372 | 0.3 | Res Refrigerator |
| Dishwasher - ENERGY STAR | Purchase of ENERGY STAR dishwasher | Federal minimum standard | ENERGY STAR website | Lost Opp | Retail Products | Other Appliances | 13 | 10 | 5 | 50% | 25 | 0.3 | Res Controlled DHW Conservation |
| Dehumidifier - ENERGY STAR | Purchase of ENERGY STAR dehumidifier | Federal minimum standard | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Other Appliances | 11 | 25 | 25 | 100% | 96 | 0.1 | Res - Dehumidifier |
| Room AC - ENERGY STAR | Purchase of ENERGY STAR Room AC | Federal minimum standard | EVT TRM User Manual No. 2009-55_RevA | Lost Opp | Retail Products | Cooling | 13 | 40 | 25 | 63% | 38 | 0.1 | Res A/C |
| Room AC - Tier 1 | Purchase of CEE Tier 1 Room AC | Federal minimum standard | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Cooling | 13 | 80 | 40 | 50% | 53 | 0.1 | Res A/C |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Single Speed Pool Pump Motor with timer | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Retail Products | Other Appliances | 10 | 1,450 | 300 | 67% | 1,245 | 0.9 | Res Pool Pump Replacement |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Single Speed Pool Pump Motor without timer | EVT TRM Portfolio Update No. 58 (pending) | Lost Opp | Retail Products | Other Appliances | 10 | 80 | 80 | 100% | 1,324 | 1.2 | Res Pool Pump Timer |
| HE LCD TV < 50" | ENERGY STAR Television | All LCD TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 135 | 0.1 | Efficient Television |
| HE LCD TV > 50" | ENERGY STAR Television | All LCD TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 260 | 0.1 | Efficient Television |
| HE Plasma TV < 50" | ENERGY STAR Television | All Plasma TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 168 | 0.1 | Efficient Television |
| HE Plasma TV > 50" | ENERGY STAR Television | All Plasma TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 289 | 0.1 | Efficient Television |
| HE LED TV < 50" | ENERGY STAR Television | All LCD TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 138 | 0.1 | Efficient Television |
| HE LED TV > 50" | ENERGY STAR Television | All LCD TVs < Tier 2 in ENERGY STAR's TV dataset | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 6 | 0 | 20 | #DIV/0! | 246 | 0.1 | Efficient Television |
| HE Internal Power Supplies (ES Desktop) | Efficient Computer Power Supply | Standard, Non ENERGY STAR Desktop Computer | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 4 | 8 | 8 | 100% | 132 | 0.0 | Res Internal Power Supply, Residential Desktop |
| HE Internal Power Supplies (80+ Desktop) | Efficient Computer Power Supply | Standard, Non 80+ Desktop Computer | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 4 | 5 | 5 | 100% | 81 | 0.0 | Res Internal Power Supply, Residential Desktop |
| HE LCD Monitors | Efficient LCD Computer Monitor | Weighted Average of Non ENERGY STAR & Forecasted TV Shipments | EVT TRM Portfolio Update No. 56a | Lost Opp | Retail Products | Consumer Electronics | 4 | 2 | 5 | 278% | 30 | 0.0 | Res Internal Power Supply, Residential Desktop |
| HE Laptops | Efficient Laptop Computer | Non ENERGY STAR Laptop Computer | ENERGY STAR Draft Comp Spec.pdf | Lost Opp | Retail Products | Consumer Electronics | 4 | 285 | 8 | 3% | 10 | 0.0 | Res Internal Power Supply, Residential Desktop |
| HE STBs | Efficient Set Top Box (Cable/Satellite) | Non ENERGY STAR Set Top Box | EPA 2.0 Specification & ENERGY STAR set_top_boxes_prod_list.xls | Lost Opp | Retail Products | Consumer Electronics | 4 | 8 | 8 | 100% | 26 | 0.6 | Res Internal Power Supply, Residential Desktop |
| Controlled Power Strip (Entertainment Center) | Efficient Controlled Power Strip | Entertainment Center without a Controlled Power Strip | EVT TRM Portfolio Update No. 56a (pending) | Lost Opp | Retail Products | Consumer Electronics | 4 | 15 | 5 | 33% | 79 | 0.0 | Standby Losses - Entertainment Center |
| Controlled Power Strip (Home office) | Efficient Controlled Power Strip | Home Office without a Controlled Power Strip | EVT TRM Portfolio Update No. 56a (pending) | Lost Opp | Retail Products | Consumer Electronics | 4 | 15 | 5 | 33% | 38 | 0.0 | Standby Losses - Home Office |
| Power Cost Monitor - Blue Line | In Home Display of Electrical Usage | No In Home Display of Electrical Usage | TRM User Manual No. 2009-55_RevA.doc | Lost Opp | Retail Products | Consumer Electronics | 3 | 140 | 20 | 14% | 540 | 0.4 | Res Indoor Lighting |
| Exhaust Fan | Efficient Exhaust Fan | Standard Exhaust Fan | TRM User Manual No. 2009-55_RevA.doc | Lost Opp | Retail Products | Ventilation | 10 | 110 | 20 | 18% | 169 | 0.1 | Res Ventilation |
| CFL - spiral 2008 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2008 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 6 | 2 | 36% | 153 | 0.0 | Res Indoor Lighting |

F-20 RES Measure Characteristics

| Measure Name | Measure Description | Measure Baseline | Source of Measure Characteristic | Measure ID1 Sector | Measure ID3 Program | Measure ID5 (e.g., End Use) | Measure Life (years) | Incremental Installed Cost (Full Cost for Retrofit) (2009\$) | Electric Utility Customer Incentive (2009\$) | Incentive as Percent of Incremental Cost | Annual kWh Saved or Generated | Maximum Load Reduction or Generated (kW) | Load Shape (choose from drop-down, right-click to view the Load Shape) |
|--|--|--|--|--------------------|---------------------|-----------------------------|----------------------|--|--|--|-------------------------------|--|--|
| CFL - spiral 2009 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2009 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 6 | 2 | 45% | 219 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2010 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2010 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 4 | 2 | 49% | 230 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2011 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2011 | Incandescent light bulb (average 78.5W) | EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 3 | 1 | 46% | 230 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2012 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2012 | Incandescent light bulb, new incandescent standard for 100W bulb to max 72W (average 69W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 3 | 1 | 31% | 115 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2013 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2013 | Incandescent light bulb, new incandescent standard for 75W bulb to max 63W (average 61.8W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 2 | 1 | 57% | 97 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2014 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2014 | Incandescent light bulb, new incandescent standard for 60W bulb to max 43W (average 56.2W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 1 | 1 | 56% | 82 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2012-2014 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 5 | 3 | 49% | 189 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2015-2016 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 4 | 3 | 57% | 138 | 0.0 | Res Indoor Lighting |
| CFL - specialty <=15W, 2017-2019 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 3 | 3 | 100% | 138 | 0.0 | Res Indoor Lighting |
| CFL - specialty >15W, 2012-2014 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 4 | 4 | 80% | 66 | 0.1 | Res Indoor Lighting |
| CFL - specialty >15W, 2015-2016 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 4 | 4 | 112% | 66 | 0.1 | Res Indoor Lighting |
| CFL - specialty >15W, 2017-2019 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 1 | 4 | 394% | 66 | 0.1 | Res Indoor Lighting |
| CFL - specialty average, 2008(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2008 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 6 | 2 | 33% | 42 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2009(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 6 | 2 | 40% | 54 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2010(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2010 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 6 | 2 | 35% | 45 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2011(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2011 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 7 | 5 | 1 | 22% | 40 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2008(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2008 | Incandescent specialty light bulb | EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 6 | 4 | 58% | 146 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2009(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2009 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 6 | 3 | 52% | 246 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2010(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2010 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 6 | 3 | 52% | 246 | 0.0 | Res Indoor Lighting |
| CFL - specialty average, 2011(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2011 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Lost Opp | Retail Products | Indoor Lighting | 3 | 5 | 2 | 41% | 246 | 0.0 | Res Indoor Lighting |
| CAC tune-up | SEER 10 unit saving 10% | SEER 10 unit without tune-up | Estimated based on recent evaluations | Retrofit | Existing Homes | Cooling | 5 | 75 | 75 | 100% | 164 | 0.4 | Res A/C |
| Central AC Tier 1 | Central Air Conditioner meeting CEE Tier 1 | Federal Air Conditioning Standard | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Cooling | 14 | 150 | 100 | 67% | 74 | 0.3 | Res A/C |
| Central AC Tier 2 | Central Air Conditioner meeting CEE Tier 2 | Federal Air Conditioning Standard | EVT Research & | Retrofit | Existing Homes | Cooling | 14 | 200 | 150 | 75% | 138 | 0.4 | Res A/C |
| HE Ductless Split (Cool only, Hydronic Home) | Efficient Ductless Air Conditioner | Central AC with ductwork | www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12430 | Retrofit | Existing Homes | Cooling | 14 | 2,000 | 500 | 25% | 180 | 0.5 | Res A/C |
| HE Ductless Split (Cool only, Ducted Home) | Efficient Ductless Air Conditioner | Central AC with ductwork | EVT Research & www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12430 | Retrofit | Existing Homes | Cooling | 14 | 6,000 | 1,500 | 25% | 180 | 0.5 | Res A/C |
| Heat Pump DHW w/ Electric DHW | ENERGY STAR Heat Pump Water Heater | Electric Hot Water Heater | www.energystar.gov/index.cfm?useaction=heat_pump.display_products_excel (GE Model only) | Retrofit | Existing Homes | Water Heating | 13 | 1,200 | 240 | 20% | 1,800 | 0.5 | Res DHW conserve |
| Solar DHW as Efficiency Measure | Solar Hot Water | Electric Hot Water Heater | EVT Research, Solar DHW/Solar, Hot Water, & Efficiency Program & BrownBag.pdf | Retrofit | Existing Homes | Water Heating | 15 | 8,000 | 1,600 | 20% | 3,600 | 2.1 | Res DHW conserve |
| Low Flow Faucets | Low Flow (Water) Faucets | Standard Faucet | TRM User Manual No. 2009-55_RevA.doc | Retrofit | Existing Homes | Water Heating | 9 | 6 | 2 | 33% | 45 | 0.0 | Res DHW conserve |
| Low Flow Showerheads | Low Flow (Water) Showerheads | Standard Showerhead | TRM User Manual No. 2009-55_RevA.doc | Retrofit | Existing Homes | Water Heating | 9 | 15 | 4 | 27% | 260 | 0.1 | Res DHW conserve |
| Tank Wrap | Insulate electric hot water tank | Electric hot water tank without insulating jacket | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Water Heating | 6 | 50 | 50 | 100% | 200 | 0.0 | Res DHW conserve |
| Comprehensive Thermal Measures Fossil Fuel Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing home conditions | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Space Heating | 20 | 6,000 | 500 | 8% | | | Res Space heat |
| Air sealing and insulation of Electrically Heated Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing home conditions | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Space Heating | 20 | 6,000 | 2,500 | 42% | 1,500 | 0.0 | Res Space heat |
| BFM retrofit - heating | Upgrade existing to brushless fan motor air handler | Permanent Split Capacitor Motor | NA Program Administrator 3 Year Plan Screening Inputs | Retrofit | Existing Homes | Space Heating | 10 | 400 | 80 | 20% | 300 | 0.2 | Res Space heat |
| BFM retrofit - cooling | Upgrade existing to brushless fan motor air handler | Permanent Split Capacitor Motor | NA Program Administrator 3 Year Plan Screening Inputs | Retrofit | Existing Homes | Cooling | 10 | 400 | 80 | 20% | 100 | 0.2 | Res A/C |
| Electrically efficient distribution fans | ECM fan motor at time of HVAC unit replacement | Permanent Split Capacitor Motor | TRM User Manual No. 2009-55_RevA.doc | Retrofit | Existing Homes | Space Heating | 18 | 200 | 50 | 25% | 462 | 0.3 | Res Space heat |
| Replacement of existing pre-2004 unit with a CEE Tier 3 qualified Clothes Washer | Replacement of existing pre-2004 unit with a CEE Tier 3 qualified Clothes Washer | Existing Pre-2004 unit | EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Existing Homes | Other Appliances | 14 | 765 | 100 | 13% | 468 | 1.7 | Res Clothes Washer |
| Heat Pump Dryer Early Replacement | Replacement of existing resistance clothes dryer with Heat Pump Clothes Dryer | Standard resistance heater clothes dryer | Best estimates of Efficiency Vermont and Clothes Dryer TRM from EVT TRM User Manual No. 2009-55_RevA | Retrofit | Existing Homes | Other Appliances | 14 | 700 | 100 | 14% | 489 | 2.0 | Res Clothes Washer |
| Refrigerator - Tier 2 Early Replacement | Replacement of existing pre-1993 unit with Tier 2 refrigerator | Existing Pre-1993 unit | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Refrigeration | 17 | 929 | 100 | 11% | 841 | 0.2 | Res Refrigerator |
| Freezer - ENERGY STAR Early Replacement | Replacement of existing 10 year old unit with ENERGY STAR freezer | Existing 10 year old unit | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Refrigeration | 16 | 330 | 50 | 15% | 68 | 0.0 | Res Refrigerator |
| 2nd Refrigeration unit turn in | Retiring and disposing of an existing second refrigerator | Existing second refrigerator | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Refrigeration | 3 | 120 | 30 | 25% | 1,339 | 0.3 | Res Refrigerator |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Single Speed Pool Pump Motor with timer | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Other Appliances | 10 | 450 | 300 | 67% | 1,245 | 0.9 | Res Pool Pump Replacement |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Single Speed Pool Pump Motor without timer | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Other Appliances | 10 | 80 | 80 | 100% | 1,324 | 1.2 | Res Pool Pump Timer |
| Ventilation fan - kitchen and bath | High efficiency ventilation fan | Standard efficiency ventilation fan | EVT TRM User Manual No. 2009-55_RevA | Retrofit | Existing Homes | Other Appliances | 10 | 110 | 20 | 18% | 169 | 0.1 | Res Ventilation |
| Exhaust Fan | High efficiency ventilation fan | Standard efficiency ventilation fan | EVT TRM User Manual No. 2009-55_RevA | Retrofit | Existing Homes | Ventilation | 10 | 90 | 23 | 25% | 169 | 0.1 | Res Ventilation |
| Hot water Pipe wrap | Insulate vertical hot/cold water pipes on electric hot water heater | No insulation on hot water pipes with electric hot water heater | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Water Heating | 6 | 20 | 20 | 100% | 37 | 0.0 | Res Controlled DHW Conservation |
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Incandescent light bulb, new incandescent standard for 100W bulb to max 72W (average 69W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Existing Homes | Indoor Lighting | 12 | 8 | 8 | 100% | 21 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Incandescent light bulb, new incandescent standard for 75W bulb to max 63W (average 61.8W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Existing Homes | Indoor Lighting | 12 | 7 | 7 | 100% | 17 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Incandescent light bulb, new incandescent standard for 60W bulb to max 43W (average 56.2W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Existing Homes | Indoor Lighting | 12 | 6 | 6 | 100% | 14 | 0.0 | Res Indoor Lighting |

F-20 RES Measure Characteristics

| Measure Name | Measure Description | Measure Baseline | Source of Measure Characteristic | Measure ID1 Sector | Measure ID3 Program | Measure ID5 (e.g., End Use) | Measure Life (years) | Incremental Installed Cost (Full Cost for Retrofit) (2009\$) | Electric Utility Customer Incentive (2009\$) | Incentive as Percent of Incremental Cost | Annual kWh Saved or Generated | Maximum Load Reduction or Generated (kW) | Load Shape (choose from drop-down, right-click to view the Load Shape) |
|--|---|--|---|--------------------|-----------------------------|-----------------------------|----------------------|--|--|--|-------------------------------|--|--|
| CFL Specialty 2012-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Existing Homes | Indoor Lighting | 7 | 11 | 11 | 100% | 54 | 0.0 | Res Indoor Lighting |
| CFL Specialty 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Existing Homes | Indoor Lighting | 7 | 12 | 12 | 100% | 49 | 0.0 | Res Indoor Lighting |
| CFL Specialty 2017-20119 | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Existing Homes | Indoor Lighting | 7 | 11 | 11 | 100% | 37 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Blend of Incandescent, halogen and CFL (2012-2014), just CFL (2015 on) and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Existing Homes | Indoor Lighting | 20 | 29 | 29 | 100% | 32 | 0.0 | Res Indoor Lighting |
| Volunteer - DI | Community direct install initiative (CFLs, pipelank wrap) | Existing home conditions | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Existing Homes | Indoor Lighting | 15 | 65 | 65 | 100% | 650 | 1.4 | Res Indoor Lighting |
| HPwES - DI | Contractor direct install (CFLs, pipelank wrap) | Existing home conditions | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Indoor Lighting | 15 | 90 | 90 | 100% | 600 | 1.2 | Res Indoor Lighting |
| Electric heat fuel switch to natural gas | Electric heat fuel switch to natural gas | Electric heat | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Space Heating | 20 | 3,571 | 1,000 | 28% | 15,200 | 6.0 | Res Space heat |
| Electric hot water fuel switch to natural gas | Electric hot water fuel switch to natural gas | Electric hot water | Aggregated participant data from EVT Home Performance Program | Retrofit | Existing Homes | Water Heating | 13 | 1,183 | 500 | 42% | 3,600 | 2.1 | Res DHW fuel switch |
| Air Source Heat Pump DHW w/ Electric DHW | Efficient Hot Water Heater | Electric Hot Water Heater | www.energystar.gov/index.cfm?#section=heat_pump.display_products_excel (GE Model only) | Retrofit | Low Income - Existing Homes | Water Heating | 13 | 1,200 | 1,200 | 100% | 1,800 | 0.5 | Res DHW conserve |
| Solar DHW as Efficiency Measure | Solar Hot Water | Electric Hot Water Heater | EVT Research. Solar DHW/Solar_Hot_Water_8_Efficiency_Program's_BrownBag.pdf | Retrofit | Low Income - Existing Homes | Water Heating | 15 | 8,000 | 8,000 | 100% | 3,600 | 2.1 | Res DHW conserve |
| Low Flow Faucets | Low Flow (Water) Faucets | Standard Faucet | TRM User Manual No. 2009-55. RevA.doc | Retrofit | Low Income - Existing Homes | Water Heating | 9 | 6 | 6 | 100% | 45 | 0.0 | Res DHW conserve |
| Low Flow Showerheads | Low Flow (Water) Showerheads | Standard Showerhead | TRM User Manual No. 2009-55. RevA.doc | Retrofit | Low Income - Existing Homes | Water Heating | 9 | 15 | 15 | 100% | 260 | 0.1 | Res DHW conserve |
| Tank Wrap | Insulate electric hot water tank | Electric hot water tank without insulating jacket | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Water Heating | 6 | 50 | 50 | 100% | 200 | 0.0 | Res DHW conserve |
| Comprehensive Thermal Measures Fossil Fuel Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing home conditions | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Space Heating | 20 | 6,000 | 6,000 | 100% | 0 | 0.0 | Res Space heat |
| Air sealing and insulation of Electrically Heated Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing home conditions | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Space Heating | 20 | 6,000 | 6,000 | 100% | 1,500 | 0.0 | Res Space heat |
| BFM retrofit - heating | Upgrade existing to brushless fan motor air handler | Permanent Split Capacitor Motor | MA Program Administrator 3 Year Plan Screening Inputs | Retrofit | Low Income - Existing Homes | Space Heating | 10 | 400 | 400 | 100% | 300 | 0.2 | Res Space heat |
| BFM retrofit - cooling | Upgrade existing to brushless fan motor air handler | Permanent Split Capacitor Motor | MA Program Administrator 3 Year Plan Screening Inputs | Retrofit | Low Income - Existing Homes | Cooling | 10 | 400 | 400 | 100% | 100 | 0.2 | Res A/C |
| Electrically efficient distribution fans | ECM fan motor at time of HVAC unit replacement | Permanent Split Capacitor Motor | TRM User Manual No. 2009-55. RevA.doc | Retrofit | Low Income - Existing Homes | Space Heating | 18 | 200 | 200 | 100% | 462 | 0.3 | Res Space heat |
| Replacement of existing pre-2004 unit with a CEE Tier 3 qualified Clothes Washer | Existing Pre-2004 unit | EVT TRM Portfolio Update No. 56 (pending) | EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Low Income - Existing Homes | Other Appliances | 14 | 765 | 765 | 100% | 468 | 1.7 | Res Clothes Washer |
| Heat Pump Dryer Early Replacement | Replacement of existing resistance clothes dryer with Heat Pump Clothes Dryer | Standard resistance heater clothes dryer | Best estimates of Efficiency Vermont and Clothes Dryer TRM from EVT TRM User Manual No. 2009-55. RevA | Retrofit | Low Income - Existing Homes | Other Appliances | 14 | 700 | 700 | 100% | 489 | 2.0 | Res Clothes Washer |
| Refrigerator - Tier 2 Early Replacement | Replacement of existing pre-1993 unit with Tier 2 refrigerator | Existing Pre-1993 unit | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Refrigeration | 17 | 929 | 929 | 100% | 841 | 0.2 | Res Refrigerator |
| Freezer - ENERGY STAR Early Replacement | Replacement of existing 10 year old unit with ENERGY STAR freezer | Existing 10 year old unit | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Refrigeration | 16 | 330 | 330 | 100% | 68 | 0.0 | Res Refrigerator |
| 2nd Refrigeration unit turn in | Retiring and disposing of an existing second refrigerator | Existing second refrigerator | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Refrigeration | 3 | 120 | 120 | 100% | 1,339 | 0.3 | Res Refrigerator |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Single Speed Pool Pump Motor with timer | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Other Appliances | 10 | 450 | 450 | 100% | 1,245 | 0.9 | Res Pool Pump Replacement |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Single Speed Pool Pump Motor without timer | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Other Appliances | 10 | 80 | 80 | 100% | 1,324 | 1.2 | Res Pool Pump Timer |
| Ventilation fan - kitchen and bath | High efficiency ventilation fan | Standard efficiency ventilation fan | EVT TRM User Manual No. 2009-55. RevA | Retrofit | Low Income - Existing Homes | Other Appliances | 10 | 110 | 110 | 100% | 169 | 0.1 | Res Ventilation |
| Exhaust Fan | High efficiency ventilation fan | Standard efficiency ventilation fan | EVT TRM User Manual No. 2009-55. RevA | Retrofit | Low Income - Existing Homes | Ventilation | 10 | 90 | 90 | 100% | 169 | 0.1 | Res Ventilation |
| Hot water Pipe wrap | Insulate vertical hot/cold water pipes on electric hot water heater | No insulation on hot water pipes with electric hot water heater | Aggregated participant data from EVT Home Performance Program | Retrofit | Low Income - Existing Homes | Water Heating | 6 | 20 | 20 | 100% | 37 | 0.0 | Res Controlled DHW Conservation |
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Incandescent light bulb, new incandescent standard for 100W bulb to max 72W (average 69W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 12 | 8 | 8 | 100% | 21 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Incandescent light bulb, new incandescent standard for 75W bulb to max 63W (average 61.8W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 12 | 7 | 7 | 100% | 17 | 0.0 | Res Indoor Lighting |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Incandescent light bulb, new incandescent standard for 60W bulb to max 43W (average 56.2W) | Based on adjusting assumptions of EVT TRM Portfolio Update No. 57 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 12 | 6 | 6 | 100% | 14 | 0.0 | Res Indoor Lighting |
| CFL Specialty 2012-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Incandescent specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 7 | 11 | 11 | 100% | 54 | 0.0 | Res Indoor Lighting |
| CFL Specialty 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Incandescent specialty light bulb moving to halogen | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 7 | 12 | 12 | 100% | 49 | 0.0 | Res Indoor Lighting |
| CFL Specialty 2017-20119 | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Halogen specialty light bulb | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 7 | 11 | 11 | 100% | 37 | 0.0 | Res Indoor Lighting |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Blend of Incandescent, halogen and CFL (2012-2014), just CFL (2015 on) and Residential and Commercial installation | Based on adjusting assumptions of EVT TRM Portfolio Update No. 56 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 20 | 29 | 29 | 100% | 32 | 0.0 | Res Indoor Lighting |
| Volunteer - DI | Community direct install initiative (CFLs, pipelank wrap) | Existing home conditions | EVT TRM Portfolio Update No. 58 (pending) | Retrofit | Low Income - Existing Homes | Indoor Lighting | 15 | 65 | 65 | 100% | 650 | 1.4 | Res Indoor Lighting |
| LowIncomeComprehensiveMeasure | Contractor direct install (CFLs, pipelank wrap) | Existing home conditions | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Indoor Lighting | 15 | 328 | 328 | 100% | 1,011 | 2.1 | Res Indoor Lighting |
| Electric heat fuel switch to natural gas | Electric heat fuel switch to natural gas | Electric heat | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Space Heating | 20 | 3,571 | 3,571 | 100% | 15,200 | 6.0 | Res Space heat |
| Electric hot water fuel switch to natural gas | Electric hot water fuel switch to natural gas | Electric hot water | Aggregated participant data from EVT Low Income Program | Retrofit | Low Income - Existing Homes | Water Heating | 13 | 1,183 | 1,183 | 100% | 3,600 | 2.1 | Res DHW fuel switch |

F-20 RES Measure Characteristics

| Measure Name | Existing Equipment Life (years) | Existing Equipment Age (years) | New Baseline Inst. Cost (2009\$) | Electric Savings Adjustment (ultimate saved kWh/1st year kWh) (%) | Fossil Fuel Savings Adjustment (ultimate saved MMBtu/1st year MMBtu) (%) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Fossil Fuel Type (Choose from drop-down) | Fossil Fuel Savings (Increased usage is negative) (MMBtu) | Water (CCF/yr) | Component 1 Life or Maint. Frequency (years) | Component 1 Replacement or Maint. Cost (2009\$) |
|---|---------------------------------|--------------------------------|----------------------------------|---|--|--|---|--|---|--|---|----------------|--|---|
| CFL Specialty 2012-2014 | | | | | | | | | | | | | 0.8 | 3.3 |
| CFL Specialty 2015-2016 | | | | | | | | | | | | | 0.8 | 3.8 |
| CFL Specialty 2017-20119 | | | | | | | | | | | | | 0.8 | 4.9 |
| SSL lamp, 2012 on | | | | | | | | | | | | | 5.8 | 1.0 |
| Volunteer - DI | | | | | | | | | | | | | | |
| HPwES - DI | | | | | | | | | | | | | | |
| Electric heat fuel switch to natural gas | | | | | | | | Res NG | -86.5 | | | | | |
| Electric hot water fuel switch to natural gas | | | | | | | | Res NG | -14.4 | | | | | |
| Air Source Heat Pump DHW w/ Electric DHW | | | | | | | | | | | | | | |
| Solar DHW as Efficiency Measure | | | | | | | | | | | | | | |
| Low Flow Faucets | | | | | | | | | | | | 2.0 | | |
| Low Flow Showerheads | | | | | | | | | | | | 4.6 | | |
| Tank Wrap | | | | | | | | | | | | | | |
| Comprehensive Thermal Measures Fossil Fuel Homes | | | | | | Res Distillate | 40.0 | | | | | | | |
| Air sealing and Insulation of Electrically Heated Homes | | | | | | | | | | | | | | |
| BFM retrofit - heating | | | | | | | | | | | | | | |
| BFM retrofit - cooling | | | | | | | | | | | | | | |
| Electrically efficient distribution fans | | | | | | | | | | | | | | |
| Clothes washers - Tier 3 Early Replacement | 14 | 11 | 393 | 0.37 | 0.34 | Res Distillate | 0.2 | Res NG | 0.2 | Res High-Use LPG | 0.4 | 9.4 | | |
| Heat Pump Dryer Early Replacement | 14 | 11 | 400 | 1.00 | | | | | | | | | | |
| Refrigerator - Tier 2 Early Replacement | 17 | 14 | 789 | 0.17 | | | | | | | | | | |
| Freezer - ENERGY STAR Early Replacement | 16 | 13 | 300 | 0.83 | | | | | | | | | | |
| 2nd Refrigeration unit turn in | | | | | | | | | | | | | | |
| Pool Pumps - Single Spd to 2speed/Variable | | | | | | | | | | | | | | |
| Pool Pump Timer (Baseline pool pump) | | | | | | | | | | | | | | |
| Ventilation fan - kitchen and bath | | | | | | | | | | | | | | |
| Exhaust Fan | | | | | | | | | | | | | | |
| Hot water Pipe wrap | | | | | | | | | | | | | | |
| CFL - spiral 2012 (Res) | | | | | | | | | | | | | 1.5 | 0.8 |
| CFL - spiral 2013 (Res) | | | | | | | | | | | | | 1.5 | 1.3 |
| CFL - spiral 2014 (Res) | | | | | | | | | | | | | 1.5 | 1.6 |
| CFL Specialty 2012-2014 | | | | | | | | | | | | | 0.8 | 3.3 |
| CFL Specialty 2015-2016 | | | | | | | | | | | | | 0.8 | 3.8 |
| CFL Specialty 2017-20119 | | | | | | | | | | | | | 0.8 | 4.9 |
| SSL lamp, 2012 on | | | | | | | | | | | | | 5.8 | 1.0 |
| Volunteer - DI | | | | | | | | | | | | | | |
| LowIncomeComprehensiveMeasure | | | | | | | | | | | | | | |
| Electric heat fuel switch to natural gas | | | | | | | | Res NG | -86.5 | | | | | |
| Electric hot water fuel switch to natural gas | | | | | | | | Res NG | -14.4 | | | | | |

FORECAST 20
Electricity Savings in Vermont from 20 Years of
Continued End-Use Efficiency Investment

Appendix 2

Residential Sector Analysis

- b. Residential Measure Penetration Projections
2008 – 2027

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|---|------------------------------|------|------|------|------|------|------|
| Shell_Heat_No Cool_DHW_SFD_Tier1 | New single family detached home without central cooling meeting Tier 1 standard (HERS 81-85) | Residential New Construction | 2 | 181 | 147 | 70 | 186 | 140 |
| Shell_Heat_No Cool_DHW_SFD_Tier2 | New single family detached home without central cooling meeting Tier 2 standard (HERS 61-80) | Residential New Construction | 99 | 113 | 147 | 186 | 116 | 140 |
| Shell_Heat_No Cool_DHW_SFD_Tier3 | New single family detached home with out central cooling meeting Tier 3 standard (HERS 0-60) | Residential New Construction | 195 | 68 | 98 | 116 | 70 | 93 |
| Shell_Heat_Cool_DHW_SFD_Tier1 | New single family detached home with central cooling meeting Tier 1 standard (HERS 81-85) | Residential New Construction | 0 | 45 | 24 | 0 | 47 | 23 |
| Shell_Heat_Cool_DHW_SFD_Tier2 | New single family detached home with central cooling meeting Tier 2 standard (HERS 61-80) | Residential New Construction | 24 | 23 | 37 | 47 | 23 | 35 |
| Shell_Heat_Cool_DHW_SFD_Tier3 | New single family detached home with central cooling meeting Tier 3 standard (HERS 0-60) | Residential New Construction | 30 | 23 | 37 | 47 | 23 | 35 |
| Shell_Heat_No Cool_DHW_SFA_Tier1 | New single family detached home without central cooling meeting Tier 1 standard (HERS 81-85) | Residential New Construction | 3 | 58 | 47 | 22 | 59 | 44 |
| Shell_Heat_No Cool_DHW_SFA_Tier2 | New single family detached home with out central cooling meeting Tier 2 standard (HERS 61-80) | Residential New Construction | 12 | 36 | 47 | 59 | 37 | 44 |
| Shell_Heat_No Cool_DHW_SFA_Tier3 | New single family attached home with out central cooling meeting Tier 3 standard (HERS 0-60) | Residential New Construction | 57 | 22 | 31 | 37 | 22 | 30 |
| Shell_Heat_Cool_DHW_SFA_Tier1 | New single family attached home without central cooling meeting Tier 1 standard (HERS 81-85) | Residential New Construction | 0 | 14 | 8 | 0 | 15 | 7 |
| Shell_Heat_Cool_DHW_SFA_Tier2 | New single family attached home with out central cooling meeting Tier 2 standard (HERS 61-80) | Residential New Construction | 24 | 7 | 12 | 15 | 7 | 11 |
| Shell_Heat_Cool_DHW_SFA_Tier3 | New single family attached home with central cooling meeting Tier 3 standard (HERS 0-60) | Residential New Construction | 15 | 7 | 12 | 15 | 7 | 11 |
| Central AC_Tier 2 Upgrade | Installation of Central AC meeting CEE Tier 2 standards | Residential New Construction | 9 | 14 | 16 | 14 | 14 | 14 |
| Dishwasher_Energy Star | Purchase of ENERGY STAR dishwasher | Residential New Construction | 315 | 341 | 368 | 313 | 320 | 328 |
| Clothes Washer_Energy Star | Purchase of ENERGY STAR Clothes washer | Residential New Construction | 189 | 204 | 220 | 187 | 206 | 227 |
| Clothes Dryer_Estar_Fuel Switch | Purchase of a fossil fuel based clothes dryer meeting specified efficiency criteria replacing a an electric clothes dryer | Residential New Construction | 96 | 104 | 112 | 95 | 100 | 105 |
| Refrigerator_Energy Star | Purchase of ENERGY STAR refrigerator | Residential New Construction | 317 | 0 | 0 | 0 | 0 | 0 |
| Refrigerator_Tier2 | Purchase of Tier 2 refrigerator | Residential New Construction | 0 | 342 | 370 | 314 | 322 | 330 |
| Eff Furnace Fan_Heating | ECM fan motor | Residential New Construction | 400 | 100 | 100 | 100 | 100 | 100 |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Residential New Construction | 0 | 7 | 8 | 9 | 10 | 10 |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Residential New Construction | 0 | 2 | 2 | 3 | 5 | 7 |
| Heat Pump Dryer | Purchase of Heat Pump Clothes Dryer | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 20 |
| CFL - spiral 2009 | ENERGY STAR qualified CFL spiral purchased in 2009 | Residential New Construction | 2619 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2010 | ENERGY STAR qualified CFL spiral purchased in 2010 | Residential New Construction | 0 | 2750 | 0 | 0 | 0 | 0 |
| CFL - spiral 2011 | ENERGY STAR qualified CFL spiral purchased in 2011 | Residential New Construction | 0 | 0 | 2887 | 0 | 0 | 0 |
| CFL - spiral 2012 | ENERGY STAR qualified CFL spiral purchased in 2012 | Residential New Construction | 0 | 0 | 0 | 2454 | 0 | 0 |

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|---|------------------------------|--------|--------|--------|--------|--------|--------|
| CFL - spiral 2013 | ENERGY STAR qualified CFL spiral purchased in 2013 | Residential New Construction | 0 | 0 | 0 | 0 | 2209 | 0 |
| CFL - spiral 2014 | ENERGY STAR qualified CFL spiral purchased in 2014 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 1988 |
| CFL - specialty <=15W, 2009-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Residential New Construction | 0 | 750 | 810 | 891 | 1069 | 1283 |
| CFL - specialty <=15W, 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2017-2019 | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2009-2014 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Residential New Construction | 0 | 750 | 810 | 891 | 1069 | 1283 |
| CFL - specialty >15W, 2015-2016 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2017-2019 | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2009 | High efficiency LED Lamp purchased in 2009 | Residential New Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2010 - 2011 | High efficiency LED Lamp purchased in 2010-2011 | Residential New Construction | 0 | 150 | 162 | 0 | 0 | 0 |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Residential New Construction | 0 | 0 | 0 | 243 | 425 | 744 |
| Eff. Generic Fixture | ENERGY STAR Pin Based Fixture | Residential New Construction | 2619 | 2750 | 2887 | 2454 | 2209 | 1988 |
| CFL - spiral 2008 (Res) | ENERGY STAR qualified CFL spiral purchased in 2008 | Retail Products | 612308 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2009 (Res) | ENERGY STAR qualified CFL spiral purchased in 2009 | Retail Products | 0 | 522884 | 0 | 0 | 0 | 0 |
| CFL - spiral 2010 (Res) | ENERGY STAR qualified CFL spiral purchased in 2010 | Retail Products | 0 | 0 | 474817 | 0 | 0 | 0 |
| CFL - spiral 2011 (Res) | ENERGY STAR qualified CFL spiral purchased in 2011 | Retail Products | 0 | 0 | 0 | 428069 | 0 | 0 |
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Retail Products | 0 | 0 | 0 | 0 | 235438 | 0 |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Retail Products | 0 | 0 | 0 | 0 | 0 | 141263 |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2012-2014 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Retail Products | 0 | 0 | 0 | 0 | 280500 | 308550 |
| CFL - specialty <=15W, 2015-2016 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2017-2019 (Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009-2012 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2012-2014 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Retail Products | 20828 | 0 | 0 | 127500 | 140250 | 154275 |
| CFL - specialty >15W, 2015-2016 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2017-2019 (Res) | ENERGY STAR qualified specialty CFL >15W purchased in 2009-2012 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2009 | High efficiency LED Lamp purchased in 2009 | Retail Products | 0 | 3390 | 0 | 0 | 0 | 0 |
| SSL lamp, 2010 - 2011 | High efficiency LED Lamp purchased in 2010-2011 | Retail Products | 0 | 0 | 7300 | 12500 | 0 | 0 |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Retail Products | 0 | 0 | 0 | 0 | 17500 | 24500 |

F-20 RES Measure Penetrations 2008-2027

| Measure Name | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| CFL - spiral 2013 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2009-2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2015-2016 | 2245 | 2470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2017-2019 | 0 | 0 | 2593 | 2593 | 2723 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2009-2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2015-2016 | 2245 | 2470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2017-2019 | 0 | 0 | 2593 | 2593 | 2723 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2009 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2010 - 2011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2012 on | 1116 | 1674 | 2512 | 3140 | 3453 | 5180 | 5439 | 5711 | 5711 | 5711 | 5711 | 5711 | 5711 | 5711 |
| Eff. Generic Fixture | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2008 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2009 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2010 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2011 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2012 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2013 (Res) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2014 (Res) | 56505 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2012-2014 (Res) | 339405 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2015-2016 (Res) | 0 | 356375 | 338556 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2017-2019 (Res) | 0 | 0 | 0 | 321629 | 273384 | 232377 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2012-2014 (Res) | 169703 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2015-2016 (Res) | 0 | 178188 | 169278 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2017-2019 (Res) | 0 | 0 | 0 | 160814 | 136692 | 116188 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2009 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2010 - 2011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2012 on | 34300 | 48020 | 62426 | 78033 | 97541 | 121926 | 146311 | 168258 | 185083 | 203592 | 203592 | 203592 | 203592 | 203592 |

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|--|---------------------|--------|--------|--------|--------|-------|-------|
| Lighting Controls | Installation of Lighting Controls for Residential Indoor Lighting | Retail Products | 0 | 0 | 0 | 100 | 102 | 107 |
| Outdoor Lighting Controls | Installation of Lighting Controls for Residential Outdoor Lighting | Retail Products | 0 | 0 | 0 | 100 | 102 | 107 |
| Clothes washers - Tier 2, 2008 | Purchase of a CEE Tier 2 qualified Clothes Washer | Retail Products | 4256 | 0 | 0 | 0 | 0 | 0 |
| Clothes washers - Tier 3, 2009 on | Purchase of a CEE Tier 3 qualified Clothes Washer | Retail Products | 0 | 3399 | 3400 | 3400 | 3740 | 4114 |
| Heat Pump Dryer | Purchase of Heat Pump Clothes Dryer | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| Refrigerator - Energy Star | Purchase of ENERGY STAR refrigerator | Retail Products | 1415 | 500 | 0 | 0 | 0 | 0 |
| Refrigerator - Tier 2 | Purchase of Tier 2 refrigerator | Retail Products | 1351 | 475 | 720 | 2200 | 2420 | 2662 |
| Freezer - Energy Star | Purchase of ENERGY STAR freezer | Retail Products | 218 | 50 | 50 | 50 | 63 | 78 |
| Refrigerator/freezer second unit turn-in | Retiring and disposing of an existing second refrigerator | Retail Products | 0 | 1500 | 2250 | 2700 | 3375 | 3375 |
| Dishwasher - Energy Star | Purchase of ENERGY STAR dishwasher | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| Dehumidifier - Energy Star | Purchase of ENERGY STAR dehumidifier | Retail Products | 1192 | 1100 | 1100 | 1100 | 1155 | 1213 |
| Room AC - Energy Star | Purchase of ENERGY STAR Room AC | Retail Products | 1296 | 2900 | 2900 | 2900 | 3045 | 3045 |
| Room AC - Tier 1 | Purchase of CEE Tier 1 Room AC | Retail Products | 3 | 12 | 12 | 18 | 36 | 63 |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Retail Products | 0 | 0 | 300 | 400 | 410 | 420 |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| HE LCD TV < 50" | ENERGY STAR Television | Retail Products | 0 | 1000 | 2340 | 3420 | 4440 | 5400 |
| HE LCD TV > 50" | ENERGY STAR Television | Retail Products | 0 | 1000 | 2400 | 3600 | 4800 | 6000 |
| HE Plasma TV < 50" | ENERGY STAR Television | Retail Products | 0 | 125 | 300 | 450 | 600 | 750 |
| HE Plasma TV > 50" | ENERGY STAR Television | Retail Products | 0 | 250 | 600 | 900 | 1200 | 1500 |
| HE LED TV < 50" | ENERGY STAR Television | Retail Products | 0 | 125 | 360 | 630 | 960 | 1350 |
| HE LED TV > 50" | ENERGY STAR Television | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| HE Internal Power Supplies (ES Desktop) | Efficient Computer Power Supply | Retail Products | 1000 | 700 | 450 | 244 | 0 | 0 |
| HE Internal Power Supplies (80+ Desktop) | Efficient Computer Power Supply | Retail Products | 1000 | 700 | 450 | 244 | 0 | 0 |
| HE LCD Monitors | Efficient LCD Computer Monitor | Retail Products | 3000 | 3090 | 3183 | 3278 | 3377 | 3478 |
| HE Laptops | Efficient Laptop Computer | Retail Products | 750 | 2000 | 2000 | 2039 | 2588 | 2651 |
| HE STBs | Efficient Set Top Box (Cable/Satellite) | Retail Products | 0 | 0 | 0 | 3762 | 4195 | 5800 |
| Controlled Power Strip (Entertainment Center) | Efficient Controlled Power Strip | Retail Products | 1250 | 2000 | 3000 | 2955 | 3368 | 3788 |
| Controlled Power Strip (Home office) | Efficient Controlled Power Strip | Retail Products | 1250 | 2000 | 3000 | 2955 | 3368 | 3788 |
| Power Cost Monitor - Blue Line | In Home Display of Electrical Usage | Retail Products | 0 | 0 | 0 | 2363 | 2388 | 2412 |
| Exhaust Fan | Efficient Exhaust Fan | Retail Products | 108 | 113 | 120 | 120 | 132 | 145 |
| CFL - spiral 2008 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2008 | Retail Products | 147841 | 0 | 0 | 0 | 0 | 0 |
| CFL - spiral 2009 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2009 | Retail Products | 0 | 126250 | 0 | 0 | 0 | 0 |
| CFL - spiral 2010 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2010 | Retail Products | 0 | 0 | 131500 | 0 | 0 | 0 |
| CFL - spiral 2011 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2011 | Retail Products | 0 | 0 | 0 | 116500 | 0 | 0 |
| CFL - spiral 2012 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2012 | Retail Products | 0 | 0 | 0 | 0 | 64075 | 0 |
| CFL - spiral 2013 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2013 | Retail Products | 0 | 0 | 0 | 0 | 0 | 38445 |
| CFL - spiral 2014 (Comm) | ENERGY STAR qualified CFL spiral purchased in 2014 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty <=15W, 2012-2014 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Retail Products | 0 | 0 | 0 | 0 | 49500 | 54450 |
| CFL - specialty <=15W, 2015-2016 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|--|---------------------|-------|--------|--------|--------|-------|-------|
| CFL - specialty <=15W, 2017-2019 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2012-2014 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Retail Products | 0 | 0 | 0 | 0 | 24750 | 27225 |
| CFL - specialty >15W, 2015-2016 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty >15W, 2017-2019 (Comm) | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Retail Products | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty average, 2008(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2008 | Retail Products | 20828 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty average, 2009(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2009 | Retail Products | 0 | 114750 | 0 | 0 | 0 | 0 |
| CFL - specialty average, 2010(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2010 | Retail Products | 0 | 0 | 170000 | 0 | 0 | 0 |
| CFL - specialty average, 2011(Res) | ENERGY STAR qualified specialty CFL <15W purchased in 2011 | Retail Products | 0 | 0 | 0 | 255000 | 0 | 0 |
| CFL - specialty average, 2008(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2008 | Retail Products | 20828 | 0 | 0 | 0 | 0 | 0 |
| CFL - specialty average, 2009(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2009 | Retail Products | 0 | 20250 | 0 | 0 | 0 | 0 |
| CFL - specialty average, 2010(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2010 | Retail Products | 0 | 0 | 30000 | 0 | 0 | 0 |
| CFL - specialty average, 2011(Com) | ENERGY STAR qualified specialty CFL <15W purchased in 2011 | Retail Products | 0 | 0 | 0 | 45000 | 0 | 0 |
| CAC tune-up | SEER 10 unit saving 10% | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Central AC Tier 1 | Central Air Conditioner meeting CEE Tier 1 | Existing Homes | 20 | 20 | 20 | 20 | 20 | 21 |
| Central AC Tier 2 | Central Air Conditioner meeting CEE Tier 2 | Existing Homes | 0 | 0 | 0 | 20 | 20 | 22 |
| HE Ductless Split (Cool only, Hydronic Home) | Efficient Ductless Air Conditioner | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| HE Ductless Split (Cool only, Ducted Home) | Efficient Ductless Air Conditioner | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Air Source Heat Pump DHW w/ Electric DHW | ENERGY STAR Heat Pump Water Heater | Existing Homes | 0 | 0 | 0 | 0 | 20 | 23 |
| Solar DHW as Efficiency Measure | Solar Hot Water | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Low Flow Faucets | Low Flow (Water) Faucets | Existing Homes | 0 | 0 | 0 | 0 | 150 | 153 |
| Low Flow Showerheads | Low Flow (Water) Showerheads | Existing Homes | 0 | 0 | 0 | 0 | 150 | 153 |
| Tank Wrap | Insulate electric hot water tank | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Comprehensive Thermal Measures Fossil Fuel Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing Homes | 414 | 75 | 0 | 0 | 0 | 0 |
| Airsealing and Insulation of Electrically Heated Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Existing Homes | 345 | 0 | 0 | 0 | 0 | 0 |
| BFM retrofit - heating | Upgrade existing to brushless fan motor air handler | Existing Homes | 0 | 0 | 0 | 0 | 50 | 53 |
| BFM retrofit - cooling | Upgrade existing to brushless fan motor air handler | Existing Homes | 0 | 0 | 0 | 0 | 50 | 53 |
| Electrically efficient distribution fans | ECM fan motor at time of HVAC unit replacement | Existing Homes | 0 | 25 | 25 | 25 | 25 | 25 |
| Clothes washers - Tier 3 Early Replacement | Replacement of existing pre-2004 unit with a CEE Tier 3 qualified Clothes Washer | Existing Homes | 1 | 1 | 30 | 30 | 30 | 30 |
| Heat Pump Dryer Early Replacement | Replacement of existing resistance clothes dryer with Heat Pump Clothes Dryer | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Refrigerator - Tier 2 Early Replacement | Replacement of existing pre-1993 unit with Tier 2 refrigerator | Existing Homes | 182 | 182 | 50 | 50 | 75 | 79 |
| Freezer - Energy Star Early Replacement | Replacement of existing 10 year old unit with ENERGY STAR freezer | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| 2nd Refrigeration unit turn in | Retiring and disposing of an existing second refrigerator | Existing Homes | 0 | 40 | 200 | 200 | 200 | 200 |

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|--|-----------------------------|------|------|------|------|------|------|
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Ventilation fan - kitchen and bath | High efficiency ventilation fan | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Exhaust Fan | High efficiency ventilation fan | Existing Homes | 0 | 0 | 0 | 0 | 20 | 20 |
| Hotwater Pipe wrap | Insulate vertical hot/cold water pipes on electric hot water heater | Existing Homes | 0 | 0 | 0 | 0 | 733 | 733 |
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Existing Homes | 0 | 0 | 0 | 0 | 3000 | 0 |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Existing Homes | 0 | 0 | 0 | 0 | 0 | 3000 |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL Specialty 2012-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Existing Homes | 0 | 0 | 0 | 0 | 3000 | 3000 |
| CFL Specialty 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL Specialty 2017-2019 | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Volunteer - DI | Community direct install imitative (CFLs, pipe/tank wrap) | Existing Homes | 0 | 500 | 350 | 350 | 0 | 0 |
| HPwES - DI | Contractor direct install (CFLs, pipe/tank wrap) | Existing Homes | 0 | 150 | 963 | 1120 | 0 | 0 |
| Electric heat fuel switch to natural gas | Electric heat fuel switch to natural gas | Existing Homes | 93 | 2 | 2 | 2 | 2 | 2 |
| Electric hot water fuel switch to natural gas | Electric hot water fuel switch to natural gas | Existing Homes | 133 | 25 | 25 | 25 | 25 | 25 |
| Air Source Heat Pump DHW w/ Electric DHW | Efficient Hot Water Heater | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Solar DHW as Efficiency Measure | Solar Hot Water | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Low Flow Faucets | Low Flow (Water) Faucets | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 242 | 242 |
| Low Flow Showerheads | Low Flow (Water) Showerheads | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 168 | 168 |
| Tank Wrap | Insulate electric hot water tank | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 194 | 194 |
| Comprehensive Thermal Measures Fossil Fuel Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Airsealing and Insulation of Electrically Heated Homes | Home Performance with ENERGY STAR (Air sealing and insulation) | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| BFM retrofit - heating | Upgrade existing to brushless fan motor air handler | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| BFM retrofit - cooling | Upgrade existing to brushless fan motor air handler | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Electrically efficient distribution fans | ECM fan motor at time of HVAC unit replacement | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 50 | 50 |
| Clothes washers - Tier 3 Early Replacement | Replacement of existing pre-2004 unit with a CEE Tier 3 qualified Clothes Washer | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 50 | 50 |
| Heat Pump Dryer Early Replacement | Replacement of existing resistance clothes dryer with Heat Pump Clothes Dryer | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Refrigerator - Tier 2 Early Replacement | Replacement of existing pre-1993 unit with Tier 2 refrigerator | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 473 | 473 |
| Freezer - Energy Star Early Replacement | Replacement of existing 10 year old unit with ENERGY STAR freezer | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |

| Measure Name | Measure Description | Measure ID3 Program | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|-----------------------------|------|------|------|------|------|------|
| 2nd Refrigeration unit turn in | Retiring and disposing of an existing second refrigerator | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 25 | 25 |
| Pool Pumps - Single Spd to 2speed/Variable | Efficient 2 or Variable Speed Pool Pump | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Pool Pump Timer (Baseline pool pump) | Pool Pump Timer | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Ventilation fan - kitchen and bath | High efficiency ventilation fan | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Exhaust Fan | High efficiency ventilation fan | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Hotwater Pipe wrap | Insulate vertical hot/cold water pipes on electric hot water heater | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 2292 | 2292 |
| CFL - spiral 2012 (Res) | ENERGY STAR qualified CFL spiral purchased in 2012 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 3500 | 0 |
| CFL - spiral 2013 (Res) | ENERGY STAR qualified CFL spiral purchased in 2013 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 3500 |
| CFL - spiral 2014 (Res) | ENERGY STAR qualified CFL spiral purchased in 2014 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL Specialty 2012-2014 | ENERGY STAR qualified specialty CFL <15W purchased in 2012-2014 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 3500 | 3500 |
| CFL Specialty 2015-2016 | ENERGY STAR qualified specialty CFL <15W purchased in 2015-2016 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| CFL Specialty 2017-2019 | ENERGY STAR qualified specialty CFL <15W purchased in 2017-2019 | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| SSL lamp, 2012 on | High efficiency LED Lamp purchased in 2012 on | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| Volunteer - DI | Community direct install imitative (CFLs, pipe/tank wrap) | Low Income - Existing Homes | 0 | 0 | 0 | 0 | 0 | 0 |
| LowIncomeComprehensiveMeasure | Contractor direct install (CFLs, pipe/tank wrap) | Low Income - Existing Homes | 1253 | 1253 | 1253 | 1253 | 0 | 0 |
| Electric heat fuel switch to natural gas | Electric heat fuel switch to natural gas | Low Income - Existing Homes | 5 | 5 | 5 | 5 | 5 | 5 |
| Electric hot water fuel switch to natural gas | Electric hot water fuel switch to natural gas | Low Income - Existing Homes | 93 | 93 | 93 | 93 | 93 | 93 |

FORECAST 20
Electricity Savings in Vermont from 20 Years of
Continued End-Use Efficiency Investment

Appendix 2

Residential Sector Analysis

- c. Residential Program Budget 2008 – 2027

RES Program Budgets

| Total | | | | | | | | | | | | | | | | | | | | | | |
|---|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|
| Customer Incentives (calculated) | \$ | 4,218,172 | \$ | 3,639,140 | \$ | 3,862,726 | \$ | 4,084,064 | \$ | 4,455,925 | \$ | 4,454,725 | \$ | 4,561,151 | \$ | 4,345,215 | \$ | 4,438,217 | \$ | 4,367,672 | \$ | 4,292,300 |
| Non-Incentives Costs | \$ | 2,129,887 | \$ | 2,710,391 | \$ | 3,375,859 | \$ | 4,214,765 | \$ | 4,062,364 | \$ | 4,069,500 | \$ | 4,009,999 | \$ | 4,122,370 | \$ | 4,049,041 | \$ | 4,010,991 | \$ | 4,005,959 |
| 1 Prgm #1: Residential New Construction | | | | | | | | | | | | | | | | | | | | | | |
| | | <u>2008</u> | | <u>2009</u> | | <u>2010</u> | | <u>2011</u> | | <u>2012</u> | | <u>2013</u> | | <u>2014</u> | | <u>2015</u> | | <u>2016</u> | | <u>2017</u> | | <u>2018</u> |
| Customer Incentives (calculated) | \$ | 326,617 | \$ | 320,804 | \$ | 352,069 | \$ | 306,503 | \$ | 311,242 | \$ | 323,242 | \$ | 257,307 | \$ | 270,922 | \$ | 289,645 | \$ | 313,802 | \$ | 333,849 |
| Non-Incentives Costs | \$ | <u>1,207,612</u> | \$ | <u>1,252,306</u> | \$ | <u>1,475,964</u> | \$ | <u>1,686,048</u> | \$ | <u>1,642,071</u> | \$ | <u>1,644,130</u> | \$ | <u>1,626,960</u> | \$ | <u>1,659,386</u> | \$ | <u>1,638,226</u> | \$ | <u>1,627,246</u> | \$ | <u>1,625,794</u> |
| Total | \$ | 1,534,229 | \$ | 1,573,110 | \$ | 1,828,033 | \$ | 1,992,551 | \$ | 1,953,313 | \$ | 1,967,372 | \$ | 1,884,267 | \$ | 1,930,308 | \$ | 1,927,872 | \$ | 1,941,048 | \$ | 1,959,644 |
| Incentive % of Total | | 21% | | 20% | | 19% | | 15% | | 16% | | 16% | | 14% | | 14% | | 15% | | 16% | | 17% |
| Cumulative Total | \$ | 1,534,229 | \$ | 3,107,340 | \$ | 4,935,373 | \$ | 6,927,924 | \$ | 8,881,236 | \$ | 10,848,608 | \$ | 12,732,875 | \$ | 14,663,183 | \$ | 16,591,055 | \$ | 18,532,103 | \$ | 20,491,747 |
| 2 Prgm #2: Retail Products | | | | | | | | | | | | | | | | | | | | | | |
| | | <u>2008</u> | | <u>2009</u> | | <u>2010</u> | | <u>2011</u> | | <u>2012</u> | | <u>2013</u> | | <u>2014</u> | | <u>2015</u> | | <u>2016</u> | | <u>2017</u> | | <u>2018</u> |
| Customer Incentives (calculated) | \$ | 2,103,733 | \$ | 2,553,163 | \$ | 2,725,110 | \$ | 2,974,839 | \$ | 3,171,924 | \$ | 3,163,311 | \$ | 3,286,538 | \$ | 3,042,603 | \$ | 3,107,298 | \$ | 3,007,911 | \$ | 2,900,237 |
| Non-Incentives Costs | \$ | <u>738,122</u> | \$ | <u>821,485</u> | \$ | <u>1,110,861</u> | \$ | <u>1,461,772</u> | \$ | <u>1,383,061</u> | \$ | <u>1,386,746</u> | \$ | <u>1,356,015</u> | \$ | <u>1,414,052</u> | \$ | <u>1,376,180</u> | \$ | <u>1,356,528</u> | \$ | <u>1,353,929</u> |
| Total | \$ | 2,841,855 | \$ | 3,374,649 | \$ | 3,835,970 | \$ | 4,436,611 | \$ | 4,554,985 | \$ | 4,550,057 | \$ | 4,642,553 | \$ | 4,456,655 | \$ | 4,483,478 | \$ | 4,364,439 | \$ | 4,254,166 |
| Incentive % of Total | | 74% | | 76% | | 71% | | 67% | | 70% | | 70% | | 71% | | 68% | | 69% | | 69% | | 68% |
| Cumulative Total | \$ | 2,841,855 | \$ | 6,216,504 | \$ | 10,052,474 | \$ | 14,489,085 | \$ | 19,044,070 | \$ | 23,594,127 | \$ | 28,236,681 | \$ | 32,693,336 | \$ | 37,176,813 | \$ | 41,541,252 | \$ | 45,795,418 |
| 3 Prgm #3: Existing Homes | | | | | | | | | | | | | | | | | | | | | | |
| | | <u>2008</u> | | <u>2009</u> | | <u>2010</u> | | <u>2011</u> | | <u>2012</u> | | <u>2013</u> | | <u>2014</u> | | <u>2015</u> | | <u>2016</u> | | <u>2017</u> | | <u>2018</u> |
| Customer Incentives (calculated) | \$ | 1,787,822 | \$ | 765,172 | \$ | 785,547 | \$ | 802,722 | \$ | 972,759 | \$ | 968,172 | \$ | 1,017,306 | \$ | 1,031,691 | \$ | 1,041,275 | \$ | 1,045,958 | \$ | 1,058,214 |
| Non-Incentives Costs | \$ | <u>184,153</u> | \$ | <u>636,599</u> | \$ | <u>789,034</u> | \$ | <u>1,066,945</u> | \$ | <u>1,037,233</u> | \$ | <u>1,038,624</u> | \$ | <u>1,027,023</u> | \$ | <u>1,048,931</u> | \$ | <u>1,034,635</u> | \$ | <u>1,027,217</u> | \$ | <u>1,026,236</u> |
| Total | \$ | 1,971,975 | \$ | 1,401,771 | \$ | 1,574,581 | \$ | 1,869,667 | \$ | 2,009,992 | \$ | 2,006,796 | \$ | 2,044,329 | \$ | 2,080,622 | \$ | 2,075,910 | \$ | 2,073,175 | \$ | 2,084,450 |
| Incentive % of Total | | 91% | | 55% | | 50% | | 43% | | 48% | | 48% | | 50% | | 50% | | 50% | | 50% | | 51% |
| Cumulative Total | \$ | 1,971,975 | \$ | 3,373,746 | \$ | 4,948,328 | \$ | 6,817,995 | \$ | 8,827,986 | \$ | 10,834,782 | \$ | 12,879,111 | \$ | 14,959,733 | \$ | 17,035,643 | \$ | 19,108,818 | \$ | 21,193,268 |

RES Program Budgets

| | | | | | | | | | |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Customer Incentives (calculated) | \$ 4,260,208 | \$ 4,018,886 | \$ 4,222,139 | \$ 4,318,997 | \$ 4,434,760 | \$ 4,461,134 | \$ 4,490,792 | \$ 4,523,876 | \$ 4,560,166 |
| Non-Incentives Costs | \$ 3,965,451 | \$ 4,247,943 | \$ 4,137,863 | \$ 4,151,677 | \$ 4,088,901 | \$ 4,073,396 | \$ 4,056,233 | \$ 4,037,350 | \$ 4,016,879 |
| Prgm #1: Residential New Construction | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
| Customer Incentives (calculated) | \$ 255,190 | \$ 294,821 | \$ 305,265 | \$ 316,143 | \$ 321,652 | \$ 327,334 | \$ 333,194 | \$ 339,240 | \$ 345,477 |
| Non-Incentives Costs | \$ 1,614,105 | \$ 1,695,622 | \$ 1,663,857 | \$ 1,667,843 | \$ 1,649,728 | \$ 1,645,254 | \$ 1,640,301 | \$ 1,634,853 | \$ 1,628,945 |
| Total | \$ 1,869,295 | \$ 1,990,443 | \$ 1,969,122 | \$ 1,983,986 | \$ 1,971,380 | \$ 1,972,588 | \$ 1,973,496 | \$ 1,974,093 | \$ 1,974,423 |
| Incentive % of Total | 14% | 15% | 16% | 16% | 16% | 17% | 17% | 17% | 17% |
| Cumulative Total | \$ 22,361,041 | \$ 24,351,484 | \$ 26,320,606 | \$ 28,304,592 | \$ 30,275,973 | \$ 32,248,561 | \$ 34,222,056 | \$ 36,196,149 | \$ 38,170,572 |
| Prgm #2: Retail Products | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
| Customer Incentives (calculated) | \$ 2,930,686 | \$ 2,636,030 | \$ 2,824,301 | \$ 2,905,344 | \$ 3,010,220 | \$ 3,025,057 | \$ 3,042,473 | \$ 3,062,557 | \$ 3,085,026 |
| Non-Incentives Costs | \$ 1,333,008 | \$ 1,478,907 | \$ 1,422,054 | \$ 1,429,189 | \$ 1,396,767 | \$ 1,388,758 | \$ 1,379,894 | \$ 1,370,142 | \$ 1,359,569 |
| Total | \$ 4,263,694 | \$ 4,114,938 | \$ 4,246,355 | \$ 4,334,532 | \$ 4,406,987 | \$ 4,413,815 | \$ 4,422,367 | \$ 4,432,699 | \$ 4,444,595 |
| Incentive % of Total | 69% | 64% | 67% | 67% | 68% | 69% | 69% | 69% | 69% |
| Cumulative Total | \$ 50,059,112 | \$ 54,174,050 | \$ 58,420,405 | \$ 62,754,937 | \$ 67,161,924 | \$ 71,575,739 | \$ 75,998,106 | \$ 80,430,804 | \$ 84,875,400 |
| Prgm #3: Existing Homes | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
| Customer Incentives (calculated) | \$ 1,074,332 | \$ 1,088,035 | \$ 1,092,572 | \$ 1,097,511 | \$ 1,102,888 | \$ 1,108,744 | \$ 1,115,125 | \$ 1,122,079 | \$ 1,129,662 |
| Non-Incentives Costs | \$ 1,018,338 | \$ 1,073,413 | \$ 1,051,952 | \$ 1,054,645 | \$ 1,042,406 | \$ 1,039,383 | \$ 1,036,037 | \$ 1,032,356 | \$ 1,028,365 |
| Total | \$ 2,092,670 | \$ 2,161,448 | \$ 2,144,524 | \$ 2,152,156 | \$ 2,145,294 | \$ 2,148,127 | \$ 2,151,162 | \$ 2,154,435 | \$ 2,158,027 |
| Incentive % of Total | 51% | 50% | 51% | 51% | 51% | 52% | 52% | 52% | 52% |
| Cumulative Total | \$ 23,285,938 | \$ 25,447,386 | \$ 27,591,911 | \$ 29,744,067 | \$ 31,889,361 | \$ 34,037,488 | \$ 36,188,649 | \$ 38,343,085 | \$ 40,501,111 |