AGENDA Item 3 5/21/2014
Handout from Carol Biedrzycki

4. **Consider Expanded Natural Gas Facilities**. Natural gas, while a carbon emitting resource, emits less carbon than coal. Austin Energy should continually assess whether the long term risk of natural gas fluctuations has been sufficiently minimized due to shale gas or other factors that, subject to compliance with environmental regulations and goals, natural gas generation capacity should be substituted for other resources in order to substantially reduce costs.

5. **Consider Nuclear Power**. The Task Force does not recommend additional nuclear power at this time, based in part on the uncertainty associated with the costs of participating in the expansion of the South Texas Nuclear Project and other unknown factors such as radioactive waste disposal. In the event power from nuclear or other generation sources is offered to Austin Energy in the future, Austin Energy should consider such offers as a substitute for resources included in the generation plan and evaluate both the economics and the environmental impact at that time.

6. **Reduce Bill Impact on Those Least Able to Pay**. Projected future increases in energy prices will burden the poorest in our community the most. Utility bills often represent the second highest bill facing a family, after the cost of housing. It is an ethical obligation that The City of Austin ease the burden on those least able to bear it.

   The Task Force recommends:

   a. expanded programs for low income citizens to reduce the energy intensity of their homes; in light of the recent Recovery Act funds available to the City of Austin for weatherization, and other potential sources of money for energy efficiency, Austin Energy should raise its own income criteria to a minimum of 200 percent of poverty and continue the program beyond the date the Recovery Act requirements terminate in 2011;
   b. Austin Energy should explore mechanisms to make energy efficiency programs available to those with incomes between 200 and 400 percent of the federal poverty guideline, such as rebates, loans or some combination; as part of this effort, Austin Energy should conduct a study specific to Austin Energy to determine income levels, energy burden and population sizes for residential consumers with household incomes up to 400 percent of the federal poverty guideline;
   c. Austin Energy should find ways and seek grants from other sources to make distributed energy generation resources available and affordable for low and medium income households (after they have been weatherized) as a hedge against future increases in energy prices;
   d. the City Council should act aggressively to assure that rented living spaces, which are disproportionately populated by lower income citizens, are given special attention through energy efficiency program outreach; and
   e. any future generation planning advisory group should include representatives of residential and low income consumers knowledgeable about energy affordability issues and solutions.

(A) Each year's historical demand for residential and commercial customers shall be adjusted for weather fluctuations, using weather data for the most recent ten years. The utility's growth in residential and commercial demand is based on the average growth in retail load in the Texas portion of the utility's service area, measured at the utility's annual system peak. The utility shall calculate the average growth rate for the prior five years.

(B) The demand goal for energy-efficiency savings for a year pursuant to paragraphs (1)(A) or (B) of this subsection is calculated by applying the percentage goal to the average growth in demand, calculated in accordance with subparagraph (A) of this paragraph. The annual demand goal for energy efficiency savings pursuant to paragraph (1)(D) of this subsection is calculated by applying the percentage goal to the utility's summer weather-adjusted five-year average peak demand for the combined residential and commercial customers.

(C) A utility may submit for commission approval an alternative method to calculate its growth in demand, for good cause.

(D) If a utility's prior five-year average load growth, calculated pursuant to subparagraph (A) of this paragraph, is negative, the utility shall use the demand reduction goal calculated using the alternative method approved by the commission beginning with the 2013 program year or, if the commission has not approved an alternative method, the utility shall use the previous year's demand reduction goal.

(E) A utility shall not claim savings obtained from energy efficiency measures funded through settlement orders or count towards the bonus calculation any savings obtained from grant incentives that have been awarded directly to the utility for energy efficiency programs.

(F) Savings achieved through programs for hard-to-reach customers shall be no less than 5.0% of the utility's total demand reduction goal.

(G) Utilities may apply peak savings on a per project basis to summer or winter peak, but not to both summer and winter peaks.

(4) An electric utility shall administer a portfolio of energy efficiency programs designed to meet an energy savings goal calculated from its demand savings goal, using a 20% conservation load factor.

(5) Electric utilities shall administer a portfolio of energy efficiency programs to effectively and efficiently achieve the goals set out in this section.

(A) Incentive payments may be made under standard offer contracts, market transformation contracts, or as part of a self-delivered program for energy savings and demand reductions. Each electric utility shall establish standard incentive payments to achieve the objectives of this section.

(B) Projects or measures under a standard offer, market transformation, or self-delivered program are not eligible for incentive payments or compensation if:

(i) A project would achieve demand or energy reduction by eliminating an existing function, shutting down a facility or operation, or would result in building vacancies or the re-location of existing operations to a location outside of the area served by the utility conducting the program, except for an appliance recycling program consistent with this section.

(ii) A measure would be adopted even in the absence of the energy efficiency service provider's proposed energy efficiency project, except in special cases, such as hard-to-reach and weatherization programs, or where free riders are accounted for using a net to gross adjustment of the avoided costs, or another method that achieves the same result. A project results in

(22) **Evaluation, measurement, and verification (EM&V) contractor** -- One or more independent, third-party contractors selected and retained by the commission to plan, conduct, and report on energy efficiency evaluation activities, including verification.

(23) **Free driver** -- Customers who do not directly participate in an energy efficiency program, but who undertake energy efficiency actions in response to program activity.

(24) **Free rider** -- A program participant who would have implemented the program measure or practice in the absence of the program. Free riders can be total, in which the participant's activity would have completely replicated the program measure; partial, in which the participant's activity would have partially replicated the program measure; or deferred, in which the participant's activity would have completely replicated the program measure, but at a time after the time the program measure was implemented.

(25) **Growth in demand** -- The annual increase in demand in the Texas portion of an electric utility's service area at time of peak demand, as measured in accordance with this section.

(26) **Gross savings** -- The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

(27) **Hard-to-reach customers** -- Residential customers with an annual household income at or below 200% of the federal poverty guidelines.

(28) **Impact evaluation** -- An evaluation of the program-specific, directly induced changes (e.g., energy and/or demand reduction) attributable to an energy efficiency program.

(29) **Incentive payment** -- Payment made by a utility to an energy efficiency service provider, an end-use customer, or third-party contractor to implement and/or attract customers to energy efficiency programs, including standard offer, market transformation and self-delivered programs.

(30) **Industrial customer** -- A for-profit entity engaged in an industrial process taking electric service at transmission voltage, or a for-profit entity engaged in an industrial process taking electric service at distribution voltage that qualifies for a tax exemption under Tax Code §151.317 and has submitted an identification notice pursuant to subsection (w) of this section.

(31) **Inspection** -- Examination of a project to verify that an energy efficiency measure has been installed, is capable of performing its intended function, and is producing an energy savings or demand reduction equivalent to the energy savings or demand reduction reported towards meeting the energy efficiency goals of this section.

(32) **Installation rate** -- The percentage of measures that receive incentives under an energy efficiency program that are actually installed in a defined period of time. The installation rate is calculated by dividing the number of measures installed by the number of measures that receive incentives under an efficiency program in a defined period of time.

(33) **International performance measurement and verification protocol (IPMVP)** -- A guidance document issued by the Efficiency Valuation Organization with a framework and definitions describing the M&V approaches.

(34) **Lifetime energy (demand) savings** -- The energy (demand) savings over the lifetime of an installed measure(s), project(s), or program(s). May include consideration of measure estimated useful life, technical degradation, and other factors. Can be gross or net savings.

(35) **Load control** -- Activities that place the operation of electricity-consuming equipment under the control or dispatch of an energy efficiency service provider, an independent system operator, or other transmission organization or that are controlled by the customer, with the objective of producing energy or demand savings.

Austin Energy Goals

Austin is committed to climate action and sustainability. The City of Austin created the Austin Climate Protection Plan (ACPP) in 2007 to guide the reduction of greenhouse gas emissions through 2020. In 2010, Austin Energy expanded the utility's ACPP goals, and in 2013 the Austin City Council voted to achieve the previously adopted 200 MW solar goal using 100 MW of local solar.

GOAL

Reduce carbon dioxide (CO_2) power plant emissions 20 percent below 2005 levels by 2020.

- Total CO_2 emitting capacity is nearly the same as it was in 1990.
- 2012 CO_2 emissions were 17 percent lower than 2005 levels.
- 2012 CO_2 per kWh of electricity was 14 percent lower than 2005 emission rate.
- Exploring options to reduce dependence on the coal-fired Fayette Power Project in LaGrange, Texas.

GOAL

Achieve 35 percent renewable energy resources by 2020, including 200 MW of solar. As part of the solar goal, 100 MW will come from solar generated in the Austin Energy service area, and at least 50 MW will be located at customer homes and businesses.

- On track to meet 35 percent goal as early as 2016, four years ahead of schedule.
- Planning is under way for local community solar to encourage solar subscriptions by residential customers who are unable to install rooftop systems.

Rec c
5 mw low and medium income

GOAL

Achieve additional 800 MW of peak demand savings through energy efficiency and demand side management by 2020.

- Austin Energy anticipates achieving the 800 MW goal of peak demand savings by 2020.
- Between 2007 and 2013, Austin Energy has achieved 371 MW of peak demand savings, which is almost half of the 800 MW goal.

800 − 371 = 429 × .05 = 21.45 × 2 = 42.90

1000 − 371 = 623 × .05 = 31.15 × 2 = 62.30

Affordability Objectives

Austin Energy is committed to an affordability goal that aims to keep its rates in the lower 50th percentile of Texas retail rates. As part of this goal, annual rate changes should not exceed two percent.

Rec. a. 5% up to 200% FPG

Rec. b 5% 200 - 400% FPG

Public Participation

Austin Energy's goals have been charted, and the utility is seeking public input on the best strategy for achieving those goals. Austin Energy will use community feedback to develop multiple generation scenarios and submit a recommendation to the Austin City Council for near- and long-term power supply options.

Stakeholder meetings will be held in early 2014 and public comments are accepted online at www.austinenergy.com/go/genplan.

2014 Timeline*

1 QUARTER

- Targeted briefings and stakeholder input meetings
- Select scenarios to study

2 QUARTER

- Run and analyze scenario results

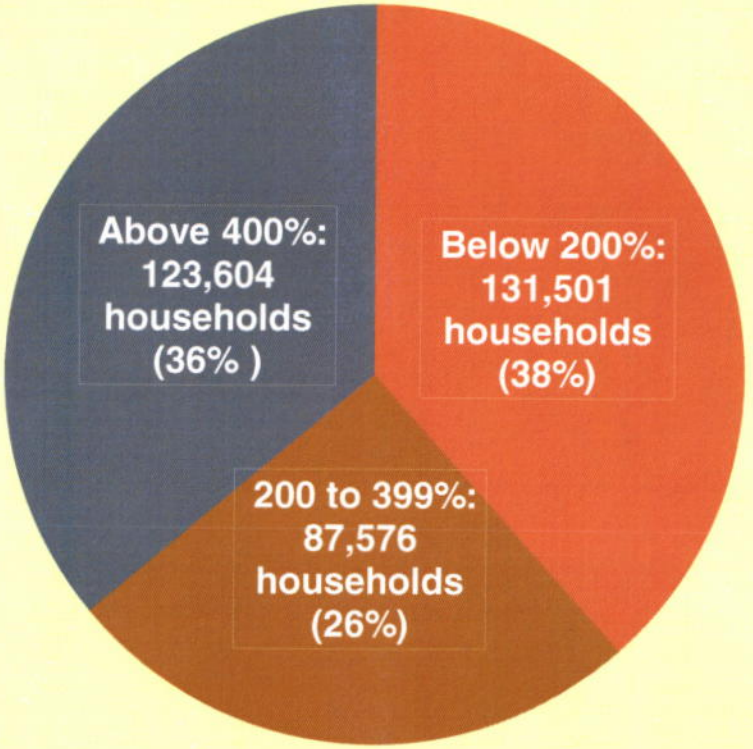
3 QUARTER

- Present preliminary recommendations to Council Committee on Austin Energy
- Council Committee on Austin Energy and Electric Utility Commission review/approval
- Present final resource plan update to Austin City Council

Schedule is subject to change

AUSTIN HOUSEHOLDS

(income as % of Federal Poverty Guideline)



Texas Ratepayers' Organization to Save Energy

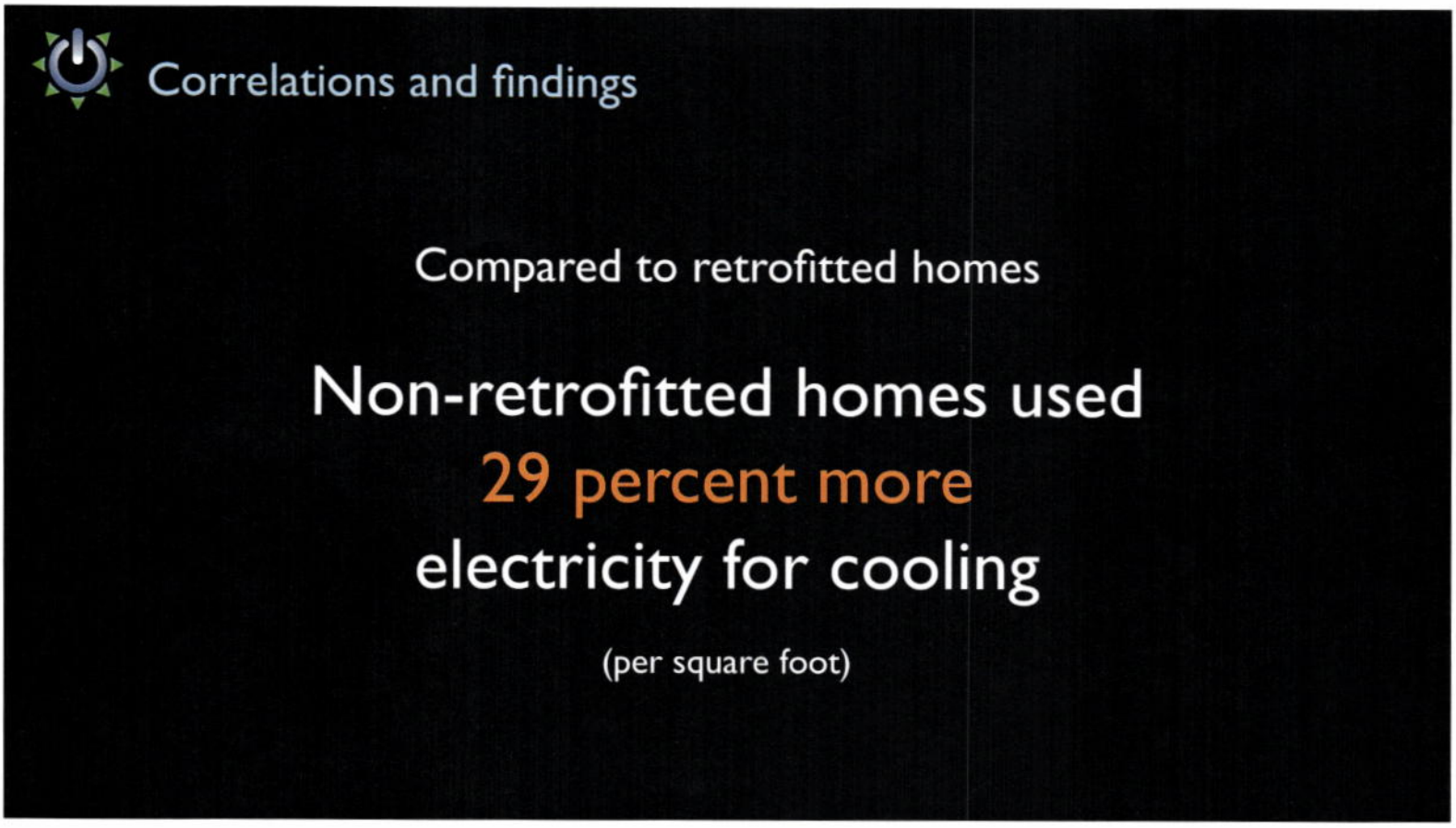
The concept of including the 200-400% of poverty as a target population will increase our target population significantly, see table below.

Based on a total Population of 822,436 or 342,681 households (dwellings)

Per cent of Poverty Income	Number of person	Percent of Total	**Estimated Number of dwellings eligible**	**Estimated cost at $5,500 per unit**
0 to 99%	166,859	20%	69,524	
100 to 199%	148,744	18%	61,976	
Total	**315,603**	**38%**	**131,501**	**$723,255,500**
200 TO 299%	**113,257**	**14%**	**47,190**	
0 to 299%	**428,320**	**52%**	**178,691**	**$982,800,500**
300 to 399%	96,927	12%	**40,386**	
0 to 399%	**525,247**	**64%**	**219,077**	**$1,204,923,500**

Going to 300% of poverty income guidelines will result in 52% of the population being eligible, going to 400% increase the per-cent of eligible population to 64% of the total population.
I have converted the number of persons in poverty to households based on the current 2.4 person's basis provided by the COA demographer.

Steve



Source: Briefing by Matthew Crosby of Penn St. on DSM Technologies and Programs
May 14, 2014

Abstract

Income, Energy Efficiency and Emissions: The Critical Relationship

The findings of this report support the need to take into account household income when developing policies and programs to reduce residential energy consumption and the resulting greenhouse gas emissions. Many programs that are appropriate for higher income households—loans, grants, rebates, education and technical assistance—are also appropriate for the lower income population. However, lower income programs also have an opportunity to leverage federal and state programs designed to make housing more affordable, including tax-exempt mortgage bonds, low income housing tax credits, weatherization grants, and related sources of funding.

Household energy use varies considerably by income and type of dwelling:

- Lower-income households (those with incomes up to 80 percent of the median) make up about 43 percent of the U.S. population and consume 36 percent of total energy in the residential sector. Higher-income households (those with incomes of more than 120 percent of the median) represent 38 percent of U.S. households and consume 45 percent of energy in the residential sector. The relationship between greenhouse gas emissions and income is almost identical to that for energy.
- Lower-income households live in homes that average 1,480 square feet, compared to higher-income households which occupy homes that average over 2,700 square feet. Households with income below 80 percent of median income consume 28 percent more energy per square foot of living space than households with income above 120 percent of median income. Lower-income households tend to be older, less-well insulated and have older less-energy efficient appliances and space heating systems. The combination of these features account for much of the higher per square foot energy use in these households.
- Lower-income households devoted 8 percent of their annual income to paying their energy bills (an average of $1,542) while higher-income households devoted only 2 percent of their annual income to paying energy bills even though their bills were close to 50 percent higher than those of average lower-income household (an average of $2,317).

Policy options discussed in this report include:

- Developing and adopting a new energy efficiency mortgage product designed to offer an alternative to conventional mortgages for all households;
- Requiring energy efficiency measures as a condition of federal and state first-time homebuyer programs that are financed from the proceeds of tax-exempt bonds.
- Requiring multi-family developers to (1) meet high energy efficiency standards as a prerequisite for receiving funds from the proceeds of the Low Income Housing Tax Credit (LIHTC) program and tax-exempt bonds, or (2) set high and specific standards in the Qualified Allocation Plans that states use to distribute this Low Income Housing Tax Credit benefit to housing developers.
- Increasing core funding for the federal programs that can help to sustain lower-income home ownership. This is especially important for very-low-income households who have fewer resources available to pay back loans, even when subsidized.

Contact: Mark Wolfe, mlwolfe@energyprograms.org, 202-237-5199.

A copy of the paper can be downloaded from the EPC website: www.energyprograms.org.

The Energy Programs Consortium is a nonprofit, energy policy project sponsored by the National Association of State Energy Officials, National Association of State Regulatory Utility Commissioners, National Energy Assistance Directors' Association and National Association of State and Community Services Programs.

February 26, 2008

6.2.4 Modeled Cost-Effectiveness of Weatherization in Low-Income Urban Housing Stock

In this Princeton Engineering thesis paper, weatherization cost-effectiveness was evaluated in six urban areas of the U.S. The central cities of these metropolitan areas were Milwaukee, Detroit, Philadelphia, Orlando, Seattle, and Los Angeles-Long Beach. The Home Energy Saver (HES) energy modeling software, coupled with data from the American Housing Survey, determined the energy use in low-income urban housing stocks in six urban areas in varying climate zones in the U.S. Based on this analysis, the research conclusions were:

- Most weatherization treatments examined are profitable.
  - Almost all treatments in the cities examined were NPV-positive (Net Present Value) over either a 7 or 15 year period.
- Greater energy efficiency is found when retrofitting houses in colder climates.
  - Urban houses in colder climates consume more energy for space conditioning than houses in warmer climates.
  - Many of the cities in these cold climates are located in the Northeast and Midwest Census regions, which have leakier and older housing stock than the South or West.
- Regional variations in energy prices significantly affect the cost-effectiveness of weatherization retrofits.
  - Differences in energy prices can outweigh differences in energy savings in a cost-effectiveness analysis. Although retrofits saved less energy in Orlando than in Detroit, because Orlando had the most expensive and Detroit had the least expensive energy prices, Orlando's low-income housing stock was among the most profitable to retrofit, as measured by NPV, and Detroit's was among the least profitable.
- Greater carbon efficiency can be realized by retrofitting houses with electric space conditioning compared to oil or natural gas.
  - Carbon-intensive electricity provided all of the space conditioning energy in Orlando, making the city's low-income housing stock a consistent top carbon saver across all weatherization treatments despite it being one of the lowest end-use energy savers. Houses that rely on conventional electric heating and cooling systems will continue to be the largest source of potential carbon savings from retrofits.
- Weatherization strategies aimed at energy savings, carbon savings, and cost-effectiveness may not lead to the same conclusion.
  - Because average energy consumption, carbon intensity of energy consumed, and energy prices all vary geographically and largely independently, energy savings, carbon savings, and cost-effectiveness are not necessarily aligned. Weatherization strategies that seek to minimize residential energy use may not be the same strategies that seek to minimize residential carbon emissions.
  - There are different ways to consider cost-effectiveness, including net present value or by abatement cost for energy or carbon.
  - Policy-makers need to recognize these differences and decide the priorities of their weatherization programs.
- Programmable thermostats provide cost-effective savings in any setting.
  - Replacing standard thermostats with programmable thermostats were a consistent source of carbon and energy savings across all cities.

Table 4-4: Measure Package Savings

Package	Annual Savings (therms)	Annual Energy Savings (kWh)	Winter Demand Savings (kW)	Summer Demand Savings (kW)	Annual Savings ($)	% Annual MMBtu Reduction	SIR
Package 1: Air and Duct Sealing, Attic to R38, Solar Solar Screens	93	1,160	0.80	0.90	$214.00	18.55%	1.07
Package 2: Air and Duct Sealing, Attic to R38, Tstat, DWH	80	1,299	0.80	1.10	$220.00	17.79%	0.83
Package 3: Air and Duct Sealing, Attic to R38, Tstat, Instant DHW	95	1,577	1.00	1.30	$264.00	21.06%	0.84
Package 4: Air and Duct Sealing, Attic to R38, DHW	77	863	0.60	0.70	$167.00	15.01%	1.00
Package 5: Air Sealing, Solar Screens, R, CW, Tstat	77	1,815	1.20	1.50	$274.00	19.62%	1.38
Package 6: SEER 14.5, Attic to R29, Ducts, Solar Screens, Tstat	65	2,328	1.5	1.9	$322.00	20.50%	0.99
Package 7: SEER 14.5, Attic To R29, Ducts, Tstat	51	2,057	1.30	1.70	$278.00	17.11%	0.93
Package 8: SEER 14.5, Attic to R29, Tstat	33	1,619	1.10	1.30	$213.00	12.47%	1.24
Package 9: SEER 15, Attic to R29, Ducts, Solar Screens, Tstat	65	2,400	1.6	2	$330.00	20.84%	0.84
Package 10: SEER 15, Attic To R29, Ducts, Tstat	51	2,135	1.40	1.70	$287.00	17.49%	0.78
Package 11: SEER 15, Attic to R29, Tstat	33	1,709	1.10	1.40	$223.00	12.91%	0.93
Package 12: SEER 16, Attic to R29, Ducts, Solar Screens, Tstat	65	2,528	1.6	2.1	$354.00	21.46%	0.76
Package 13: SEER 16, Attic To R29, Ducts, Tstat	51	2,277	1.50	1.90	$303.00	18.18%	0.69
Package 14: SEER 16, Attic to R29, Tstat	33	1,874	1.20	1.50	$241.00	13.70%	0.79
Package 15: SEER 17, Attic to R29, Ducts, Solar Screens, Tstat	65	2,641	1.70	2.10	$357.00	22.01%	0.69
Package 16:	51	2,403	1.60	2.00	$317.00	18.77%	0.63