

## 2006-2008 Energy Efficiency Programs Upstream HVAC/Motor Distributor Rebate Concept Paper

### 1. Projected Program Budget

		2006	2007	2008
Administration				
	Administrative Overheads	\$ 16,270	\$ 16,164	\$ 15,507
	Administrative Other	\$ 203,550	\$ 189,102	\$ 194,385
Marketing & Outreach		\$ 111,200	\$ 101,400	\$ 94,400
Direct Implementation				
	Activity	\$ -	\$ -	\$ -
	Installation	\$ -	\$ -	\$ -
	Hardware & Materials	\$ -	\$ -	\$ -
	Procurement	\$ 23,055	\$ 32,960	\$ 32,960
	Incentives	\$ 768,480	\$ 1,098,690	\$ 1,098,690
EM&V		\$ -	\$ -	\$ -
<b>Total</b>		<b>\$ 1,122,555</b>	<b>\$ 1,438,316</b>	<b>\$ 1,435,942</b>

### 2. Projected Program Impacts

2006			2007			2008		
Net kWh	Net kW	Net Therms	Net kWh	Net kW	Net Therms	Net kWh	Net kW	Net Therms
2,376,390	2,130	(4,006)	3,395,095	3,044	(5,701)	3,395,095	3,044	(5,701)

### 3. Program Cost Effectiveness

Attached

Our proposed program design and implementation will cost-effectively contribute to the achievement of balanced energy savings and peak demand reduction by SDG&E's portfolio of programs through:

- Reducing air conditioning load that is a major component of critical peak system load.
- Balancing the needs of residential and non-residential customers by obtaining 11.0% of energy savings and 25.0% peak demand reduction from residential customers, through directing 18.5% of incentives to them. This balance expands the market for cost-effective savings beyond the non-residential sector, developing market channels for the future. This is especially important in SDG&E's service territory, which is disproportionately residential compared to that of the other California IOUs.
- Requiring quality installation to qualify for an equipment incentive. The program will reinforce the midstream program; help to align the interests of upstream and midstream market actors; and contribute to a more complete transformation of market practices, balancing short term resource acquisition with longer term market transformation.

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- Building on developments in building codes, federal equipment standards, ENERGY STAR branding, and the efforts by CEE, NATE, and others to define and deploy quality installation standards and practices.

#### **4. Program Descriptors**

The proposed Upstream HVAC/Motor Program targets residential and small-to-medium commercial customers in both the retrofit and new construction applications. This is part of a comprehensive statewide approach to addressing the HVAC market at the upstream, midstream, and downstream levels; the Conservation Services Group (CSG) Team proposes a similar approach to coordinating upstream and midstream efforts and to distributing incentives at the midstream level to SCE and Southern California Gas (So Cal Gas). The proposed program is a modification of SDG&E's current Upstream HVAC/Motor Distributor Rebate Program. The most significant change in the proposed modification is that incentives would be issued at the midstream level to maximize cost-effectiveness and market impacts, while working with upstream players – manufacturers and distributors – in a manner that supports their business goals and secures their participation. Also worth noting is that the proposed program expands from non-residential HVAC and motors to include residential HVAC equipment and installation. The program targets all of SDG&E territory, but emphasizes customers in Climate Zones 10, 14, and 15.

We project that reasonable market penetration for the program will provide incentives for an average of 3,800 premium efficiency residential systems per year (12% market share of replacement residential systems; 20% market share for new construction residential systems) and 2,000 high efficiency commercial systems per year (25% market share for replacement commercial systems; 30% market share for new construction commercial systems). We project throughput of motor incentives to total about 400 per year on average.

#### **5. Program Statement**

The HVAC equipment market is highly competitive. Customers tend to view equipment as commodities, and consider brand important only as a measure of anticipated product reliability or customer service, based on prior experience. Further, as in the appliance industry, foreign manufacturers are beginning to enter the US market and are competing based on price as they work to increase brand recognition. Price competition, increasing materials and component costs, first-cost approaches to sales, and the commoditization of HVAC equipment have driven profits down so that most upstream and midstream actors are earning maximum profits of about 5 percent on each sale. As a result of these market conditions, manufacturers in particular are desperate to find opportunities for increased brand recognition and market differentiation. In summary, the current HVAC market is characterized by sales based predominantly on equipment costs. This has led to dwindling profitability in the upstream and midstream sectors, and insufficient

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information among customers about the benefits of energy efficiency. All parties would benefit from changing the discussion at the time of sale to focus on comfort, customer service, and long-term cost of operating the equipment.

At the same time, residential and commercial customers who are at all attuned to energy efficiency concerns may be aware of the increasing stringency of federal standards and state codes, and therefore believe that products that just meet the standard are already highly energy efficient. Customers need more information about the range of efficiency available in the market, and the size of efficiency gain they can experience by combining premium equipment with quality installation and sealed ducts.

### **6. Program Rationale**

To address the first problem identified above – an HVAC market focused on first cost, resulting in generic equipment installation and minimal profitability in the industry – the CSG Team proposes a coordinated program that brings upstream and midstream strategies closer together. Our approach can help the entire industry move from the marginally profitable business of selling standard equipment to customers every 18 years to a sustainable service-oriented business model that integrates proper sizing, installation techniques, duct sealing, and ongoing maintenance. The service-based approach has been proven to increase customer retention, predict and prevent peak season equipment failure, improve customer service scheduling, and dramatically increase profits at both the upstream and midstream levels. This will also help to achieve cost-effective energy savings and significant peak demand reductions.

To address the second problem – customers' assumption that they are getting good energy efficiency with standard products and installation – the program requires that incentives tie premium efficiency equipment together with quality installation to maximize energy savings, cost-effectiveness, and customer association of efficiency with quality customer service.

The CSG Team proposes a new approach, namely to drive all incentives toward the midstream level rather than upstream or downstream. We are advancing this approach for several reasons:

- Manufacturers and distributors already have a strong business motivation to sell premium efficiency equipment – more advanced equipment yields higher profitability. They do not need financial incentives to motivate their efforts to sell higher margin equipment, but instead need market support and tools to change the critical actor in the entire HVAC (and motor) decision process: the contractor and specifier. In fact, manufacturers have commented that incentives need to be higher than the market would truly require simply to justify their administrative burden for identifying customer information. In this market sector, it is more cost-effective – and leads to more lasting market changes – to aim the incentives at the midstream.

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- Manufacturers and distributors can influence the products available to the midstream and provide the technical, business, and sales tools to allow dealers to upsell high efficiency equipment with a quality installation.
- The incentives at the midstream allow the contractor the option of either passing the incentive along to the customer or keeping the incentive as profit (or more likely, something in between). The key is for contractors to sharpen the value proposition to the customer and also improve their sales techniques so that the customer will choose the premium efficiency package.
- Influencing the knowledge, behavior, and power of the midstream will have longer term impacts on HVAC installation practices, minimizing lost opportunities that might be created with an upstream, rebate-only approach.

We believe that, compared to others, this approach offers the potential for changing stocking and supply practices without upstream incentives, therefore adding greater cost-effectiveness. By coordinating incentives with midstream actors, we intend to create strong motivation for dealers and contractors to improve their sales techniques for premium efficiency equipment and integrate quality installation as a standard practice. This approach leads to a sustainable HVAC and motors effort that serves as a profitable business model for all market sectors, and benefits customers by providing them with improved equipment and installation.

#### **7. Program Outcomes**

The major program outcomes anticipated for the proposed upstream HVAC and Motors program are:

- Participation of all major HVAC manufacturers and distributors, and motors distributors, active in SDG&E territory (participants should represent at least 75% of combined market share);
- Increased supply and stocking of premium efficiency HVAC and motors for SDG&E residential and commercial customers;
- Increased sales and technical training of midstream contractors focused on premium efficiency equipment and quality installation;
- Increased integration of quality installation with HVAC systems installation;
- Increased market penetration of duct sealing as a percentage of HVAC installations;
- Increased energy efficiency-oriented advertising by upstream and midstream participants.

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In the first program year, the CSG Team anticipates focusing upstream efforts on the manufacturers representing the largest share of the HVAC market: Carrier (UTC), Trane (American Standard), Goodman (Amana) and Lennox, in addition to recruiting Sears as part of the residential upstream sector. Combined, these manufacturers' products constitute over 70 percent of residential HVAC systems sold in California, and even a greater share of the commercial sector. In addition to their concentrated market power, these manufacturers – and their distributors, an increasingly consolidated market sector – have the closest ties to the midstream players, and have expressed interest in moving beyond business models based on first-cost and equipment replacement on failure.

With regard to motors, we will focus heavily on the major distributors of motors in SDG&E territory. We maintain the conventional strategy for motors because of the lack of a midstream program similar to HVAC TIMIC and because of the relatively smaller unit volumes for motors as compared to HVAC equipment expected in the program.

We will work with all manufacturers and distributors participating in the current statewide program to ensure a smooth transition to the new approach. We will build upon our existing contact base to ensure we develop a manufacturer and distributor network that fully represents the commercial and residential sectors and includes product and technical personnel as well as sales, marketing, and training representatives.

By summer 2006, in time to influence planning and sales for the 2007 air conditioning season, we will recruit all major manufacturers and distributors. Because the program does not rely on upstream incentives, participation will be defined by:

- Active engagement and expressed interest in the program;
- Dedicated contacts who will work with the program;
- Commitment to increased stocking and sale of premium efficiency HVAC equipment or motors;
- Commitment to promoting, through training, coordinated manufacturer/distributor incentives, and marketing, the proper installation of premium efficiency equipment at the midstream level, especially to their “elite” dealer and contractor networks;
- Assistance in downstream marketing efforts focused on achieving efficiency gains, to be executed through the midstream.

The major milestones will be measuring impacts during the pre- and peak sales seasons for air conditioning and heating equipment, allowing an assessment of market impacts at the upstream and midstream levels. The CSG Team will provide quarterly market updates to ensure the program is on target for its goals and that all upstream actors have the tools, information, and motivation they need to increase the supply of premium efficiency motors and HVAC systems.

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### **8. Program Strategy**

The CSG Team will use the following strategies for program success:

- Nonresidential Midstream Rebates
- Nonresidential Upstream Rebates
- Nonresidential Quality Installation
- Nonresidential Appliance Early Retirement (HVAC)
- Nonresidential New Construction
- Nonresidential Upstream Training
- Nonresidential Targeted Marketing
- Residential Midstream Rebates
- Residential Upstream Rebates
- Residential Quality Installation
- Residential Appliance Early Retirement (HVAC)
- Residential New Construction
- Residential Comprehensive HVAC
- Residential Upstream Training
- Residential Targeted Marketing

#### **8.1.1. Program Strategy Description**

- *Nonresidential and Residential Midstream Rebates:* While this is an upstream focused program, the strategy is intended to increase the level of coordination between the upstream and midstream sectors, leveraging the significant influence of the midstream on the equipment installed. Therefore, the CSG Team will coordinate with SDG&E's TIMIC contractor to issue rebates at the midstream level. We will work with the key upstream players – manufacturers, distributors, and retailers – to present the business case for both them and for their midstream representatives, and they will carry the message to the midstream sector, supported by the coordinated effort of this program and the TIMIC program.
- *Nonresidential and Residential Upstream Rebates:* As noted above, the rebates in the proposed program will be issued at the midstream rather than upstream level, with the cooperation of upstream players. In some cases, this approach will enhance the efforts of upstream players, who offer both midstream and downstream rebates for selected equipment during early season promotions. The CSG Team will coordinate the program planning and provide up-to-date information about rebate activities, successes, and lessons learned with the upstream participants. We anticipated that the results of our upstream and coordinated midstream approach will be changed stocking practices towards high and premium efficiency equipment by the upstream sector, and improved sales techniques and customer service at the midstream level.

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- *Nonresidential and Residential Quality Installation:* One of the innovative elements of the CSG Team strategy is that all HVAC installations are required to meet defined quality installation standards in order to be eligible for the incentive. This strategy increases total energy and demand savings, and is expected to improve customer satisfaction and business relationships between customers and their HVAC suppliers.
- *Nonresidential and Residential Appliance Early Retirement (HVAC):* The CSG Team, as part of its upstream relationships, anticipates working with manufacturers and distributors to encourage them to track and share (at least with the midstream) data on product sales by date. By identifying customers with older, inefficient systems, we will target good candidates for early retirement and lock in energy saving at the earliest possible date.
- *Nonresidential and Residential New Construction:* Incentives and quality installation will be offered for both existing/retrofit applications and new construction. In order to secure the quality installation of premium efficiency equipment in nonresidential new construction, the CSG Team will coordinate with relevant programs such as SDG&E's Savings by Design and other statewide programs to ensure that builders and developers are aware of the HVAC program.
- *Residential Comprehensive HVAC:* The proposed program incorporates residential comprehensive HVAC, along with nonresidential offerings. The components of the comprehensive HVAC program include new construction and residential retrofit, high and premium efficiency heating and cooling equipment, as well as quality installation. The program will address these measures through the upstream in coordination with the midstream to deliver increased stocking of premium efficiency equipment, improved sales training by the upstream players, and improved customer service and quality installation at the midstream levels.
- *Nonresidential and Residential Upstream Training:* Manufacturers and distributors typically offer sales tools and incentives to influence the products and models sold by the midstream sector. The CSG Team will work with the upstream players to provide technical, business, and sales tools to improve the conversion rate for early retirement, annual maintenance, and adoption of premium efficiency units. The Team will work through the upstream, and will help manufacturers and distributors incorporate these training tools into their own training curricula and offerings to the midstream.
- *Nonresidential and Residential Targeted Marketing:* As an upstream program, the CSG Team will target the manufacturers and distributors of

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HVAC equipment representing SDG&E territory. The team will build on existing relationships with industry to reach out to these players, and will work one-on-one with each organization. Therefore, the Team does not anticipate the need for large quantities of marketing materials; key materials will include program overviews and the business case for selling premium efficiency equipment through the program.

### **8.1.2. Program Indicators**

The primary goal of the program strategy is to procure energy savings and demand reduction. The program savings goals are summarized in Section 2.

## **9. Program Objectives**

Program objectives and milestones are addressed in Section 7 – Program Outcomes, above.

## **10. Program Implementation**

CSG, as the prime contractor for the Upstream HVAC/Motor program, will serve as the point of contact for SDG&E and with midstream vendors to ensure consistency of goals, approach, and messaging.

D&R International will lead upstream outreach and coordination. D&R has extensive experience working in the upstream sector, based on its work with the national ENERGY STAR program, serving as the liaison for the program with manufacturers and retailers for several major product groups. D&R has already contacted several leading manufacturers. D&R and CSG will work with these companies, as well as building on their contacts in trade associations such as North American Technical Excellence (NATE), Air Conditioning Contractors of America (ACCA), Air Conditioning and Refrigeration Institute (ARI), and Heating, Air Conditioning, and Refrigeration Distributors International (HARDI), to explain the details of the program, understand the specifics of their business models, and find custom-tailored ways for them to expand their sale and stocking of premium efficiency equipment. We will also develop plans, tools, and content for distributor and dealer training to improve the follow-through at the critical time of contractor-customer interaction. D&R will work with manufacturers and distributors on an ongoing basis to identify any market barriers to increased supply of high efficiency equipment, help overcome them, and provide the tools and information that upstream actors require.

Rather than offering incentives to the upstream players, waiting extended periods for equipment to move from stocking to installation, and requiring upstream actors to track down the detailed customer information required to obtain a rebate, we will work with the midstream program implementer to drive incentives at that level. We have specified incentive levels for each measure. For HVAC measures, incentives are only available when qualified equipment is installed according to defined



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quality installation practices, including proper sizing and the correction of airflow and refrigerant charge. In addition, ducts must be tested, and duct sealing, when needed, can earn an additional incentive. As noted in Section B.1, CSG proposes the same approach with SCE and So Cal Gas; if successful in our proposals, we anticipate a coordinated approach that will make the process clearer to all upstream and midstream market actors.

The most complicated aspect of the program mechanics is that we will need to coordinate the distribution of incentives with the TIMIC program. Our proposed upstream HVAC/Motor program defines the eligible equipment and incentive levels. When the midstream implementer verifies a quality installation of eligible products, provides the requisite customer data, and ensures appropriate quality assurance measures, CSG will issue the incentive to the midstream vendor for distribution to the contractors.

### **11. Customer Description**

The program, while focused on interacting primarily with upstream actors and the midstream program implementer, targets residential and small and medium sized commercial customers seeking HVAC or motors replacements in existing buildings, or installations in new construction applications. We will especially target customers in climate zones 10, 14, and 15, in line with SDG&E's priorities for the HVAC TIMIC Program.

### **12. Customer Interface**

The program design, moving incentives to the midstream, is intended to support the critical communication between contractors and their customers, but also creates a motivation on the part of contractors to promote the sale of premium efficiency equipment and quality installation. The CSG Team will ensure that manufacturers and distributors have up-to-date information about program status, numbers of incentives issued and remaining, and market impacts in SDG&E territory.

The CSG Team will provide clear and concise information about incentives, applicable federal tax credits and deductions, and sales techniques, as well as quality installation checklists and other marketing and education materials to manufacturers and distributors, so they can provide them to dealers/contractors, for use in presenting energy efficiency opportunities to their customers.

### **13. Energy Measures and Program Activities**

#### **13.1. Prescriptive Measures.**

See SDG&E February 1, 2006 Workbook

#### **13.2. kWh Level Data**

See SDG&E February 1, 2006 Workbook

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### **13.3. Non-energy Activities**

End Use Load (if applicable)

Residential and small/commercial HVAC: equipment, proper sizing and installation, duct testing and sealing; commercial motors.

Targeted Sector (if applicable)

The market segments that will be reached through the proposed program are:

1. HVAC and motors manufacturers and distributors;
2. Midstream contractors in HVAC and motors industries;
3. Residential and commercial customers for new construction and HVAC/motors replacements.

#### **13.3.1. Activity Description**

The following non-energy activities are a core part of the proposed program:

1. Outreach and account management for upstream sector – HVAC and motors manufacturers and distributors;
2. Development and distribution of business, sales, and technical training content via the upstream players;
3. Development of customer marketing tools and information for use by contractors, to be distributed by upstream players.

#### **13.3.2. Quantitative Activity Goals**

The quantitative goals for the non-energy activities include:

1. Securing participation of upstream actors representing over 75% of market share in SDG&E territory;
2. Increasing stocking and sales of premium efficiency equipment in SDG&E territory by 25%;
3. Integration of program tools into dealer/contractor training by manufacturers/distributors representing at least 50% of market share.

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### **13.3.3. Assigned attributes of the activity (market sector, end use)**

The proposed approach will target the residential replacement and new construction sectors, and the small and medium size commercial markets. The majority of measures will be installed in Climate Zone 10, given the concentration of population (and commercial businesses) and associated air conditioning in that part of SDG&E territory.

The residential sector will account for fully half of the air conditioning capacity upgraded to higher efficiency equipment (measured in tons) achieved through the proposed program. The first year will focus on assisting market actors in the transition to, and beyond, the new federal standard for residential air conditioning equipment, as well as the tax credits introduced with the 2005 energy bill. Starting in the 2007 cooling season, the CSG Team will target efforts to increase installation of higher efficiency equipment. Both the residential and commercial sectors will be targeted in a manner that takes into account the rising cost of natural gas, and therefore greater appeal of energy efficient heating equipment.

The commercial sector will achieve greater overall cost-effectiveness and energy savings per project, due to the lower federal standard and therefore greater incremental measure savings in that part of the market.

### **14. Subcontractor Activities**

*Provide a list of subcontractors and subcontractor responsibilities*

D&R will be the primary subcontractor, leading the outreach to HVAC manufacturers and distributors. D&R has established relationships with several key upstream players and trade associations, and will leverage its understanding of both business models for and market barriers to premium efficiency equipment. D&R will establish an account management system for manufacturers and distributors, so that each company has an assigned point of contact who is familiar with their needs and will provide customized materials and information to ensure the program is meeting the needs of each participant. D&R will also develop content for sales training and marketing materials.

### **15. Quality Assurance and Evaluation Activities**

The purpose of quality assurance is not so much to catch mistakes or improper conduct after the fact, although this is an essential feature of any QA/QC system, but to reduce the chances of such things happening in the first place. Therefore, our QA/QC activities will start with clear and simple rules for incentives, carefully designed collateral materials, education and training of market participants, and a robust information system (potentially that of the HVAC TIMIC contractor if it meets our standards) for tracking and analyzing program data. We will supplement

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this approach with a rigorous inspection protocol (please see below) in coordination with the HVAC TIMIC contractor.

We will coordinate with the HVAC TIMIC contractor's inspection system to make sure that: a) the above code equipment has in fact been installed; and, b) that the installation has met the quality installation standards SDG&E expects. We assume that the HVAC TIMIC contractor will require HVAC contractors to have a QA/QC system in place, and that they will report the results of that system to the HVAC TIMIC contractor. We further assume that the HVAC TIMIC contractor will layer on an additional level of inspections. We would assume that this level of inspections would be at least 5% of the jobs, and would be based on a random, but representative, sample of jobs by each HVAC contractor enrolled in the program. We will require regular reporting from this system to verify that claimed measures have actually been installed. Finally, upstream program staff will perform direct inspections of a random sample of 0.5 – 1% of equipment installations. This three-tier system will provide assurance to SDG&E that program spending is producing real results.

### **16. Marketing Activities**

Given the high level of market concentration at the upstream level for HVAC and motors, marketing to upstream actors will be direct and customized for each company. CSG and D&R will develop residential and commercial, technical, sales, marketing, and training contacts with each major manufacturer and distributor. The CSG Team will develop general content for training and marketing materials for upstream players to integrate into their own businesses, and will provide assistance in customizing them based on an understanding of the specific needs and approaches of each company.

Marketing materials for use by contractors in their interactions with downstream customers will be developed in conjunction with the HVAC TIMIC contractor and with SDG&E program and marketing staff, and will include:

- Program informational brochures targeted to residential and commercial customers;
- Self-audit/pre-qualification forms including potential savings by zip code;
- Co-op ads;
- Customer/contractor success stories as they become available among program early adopters.

In addition to performing program marketing activities, the CSG Team will coordinate with:

- HVAC and motors program leads within SDG&E;
- SDG&E commercial account representatives;

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- The SDG&E Customer Contact Center;
- Statewide marketing and outreach implementers (Flex Your Power, UTEEM, RSE).

### **17. CPUC Objective**

The program meets the following CPUC objectives (as stated in the Energy Efficiency Policy Manual, Version 3, pages 2-4):

- “Reduce the environmental impact (including the greenhouse gas emissions) associated with the state’s energy consumption”: The program reduces the need to generate electricity and does so at a high level of coincidence with system peak, thereby reducing the demand on what are often the most polluting generating assets.
- “Pursue all cost-effective energy efficiency opportunities over both the short- and long-term”: Our proposed program design and implementation will contribute to the achievement of balanced energy savings and peak demand reduction by SDG&E’s portfolio of programs through:
  - Reducing air conditioning load that is a major component of critical peak system load.
  - Balancing the needs of residential and non-residential customers by obtaining 11.0% of energy savings and 25.0% peak demand reduction from residential customers, through directing 18.5% of incentives to them. This balance expands the market for cost-effective savings beyond the non-residential sector, developing market channels for the future. This is especially important in SDG&E’s service territory, which is disproportionately residential compared to that of the other California IOUs.
  - Requiring quality installation to qualify for an equipment incentive. The program will reinforce the midstream program; help to align the interests of upstream and midstream market actors; and contribute to a more complete transformation of market practices, balancing short term resource acquisition with longer term market transformation.
  - Building on developments in building codes, federal equipment standards, ENERGY STAR branding, and the efforts by CEE, NATE, and others to define and deploy quality installation standards and practices.
- Reduce lost opportunities and eliminate cream skimming: The program links equipment incentives with quality installation, thus reducing the lost opportunities and cream skimming inherent in equipment only programs. Full coordination between the upstream and midstream programs will best

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leverage the investments in each program in marketing, customer contact and enrollment, field costs, and program administration, thereby further reducing lost opportunities.

- “Aggressively increase overall capacity utilization and lower peak loads through the deployment of low load factor/high critical peak saving measures”: This program focuses primarily on reducing air conditioning load thereby lowering system peaks and flattening the load shape at all scales of the system (generation, transmission, and distribution down to the sub-station or network level).
- “Appropriate balance for portfolio funding of resource programs across market sectors (e.g., residential, industrial, commercial)”: The program has extensive goals for air conditioning savings in residential buildings, thereby complementing SDG&E’s continued work in commercial buildings and increasing equity across customer sectors.
- “Deployment of new and improved energy efficiency products and applications”: The program will incentivize above code equipment, thus continuing to guide the HVAC and motors industries to push efficiency beyond building code and federal equipment standards. The link we propose between HVAC equipment incentives and quality installation will assist SDG&E in the broader deployment of more advanced energy efficiency services that have not yet become established in the market.