

The “Ideal” Energy Efficiency Program

**Pennsylvania Public Utilities Commission
November 19, 2008**



Major energy challenges face the US and Canada today

Cost Management

- High energy bills
 - Energy expenditure has increased in the US by 25% since 2001
 - The impact for low income groups has been particularly significant (many low income families spend 10%+ of their gross income on gas and electricity)
 - In 2007, \$2b was spent on Low Income Home Energy Assistance Program
 - Business costs increasing and this is reflected in consumer costs (e.g. food)
- Infrastructure costs such as the grid are on the rise

Reliability & Energy Independence

- The US depends upon foreign sources for 30% of its total energy consumption
- 80% of total fossil fuels are controlled by “potentially unstable” nations

Environment / Climate Change

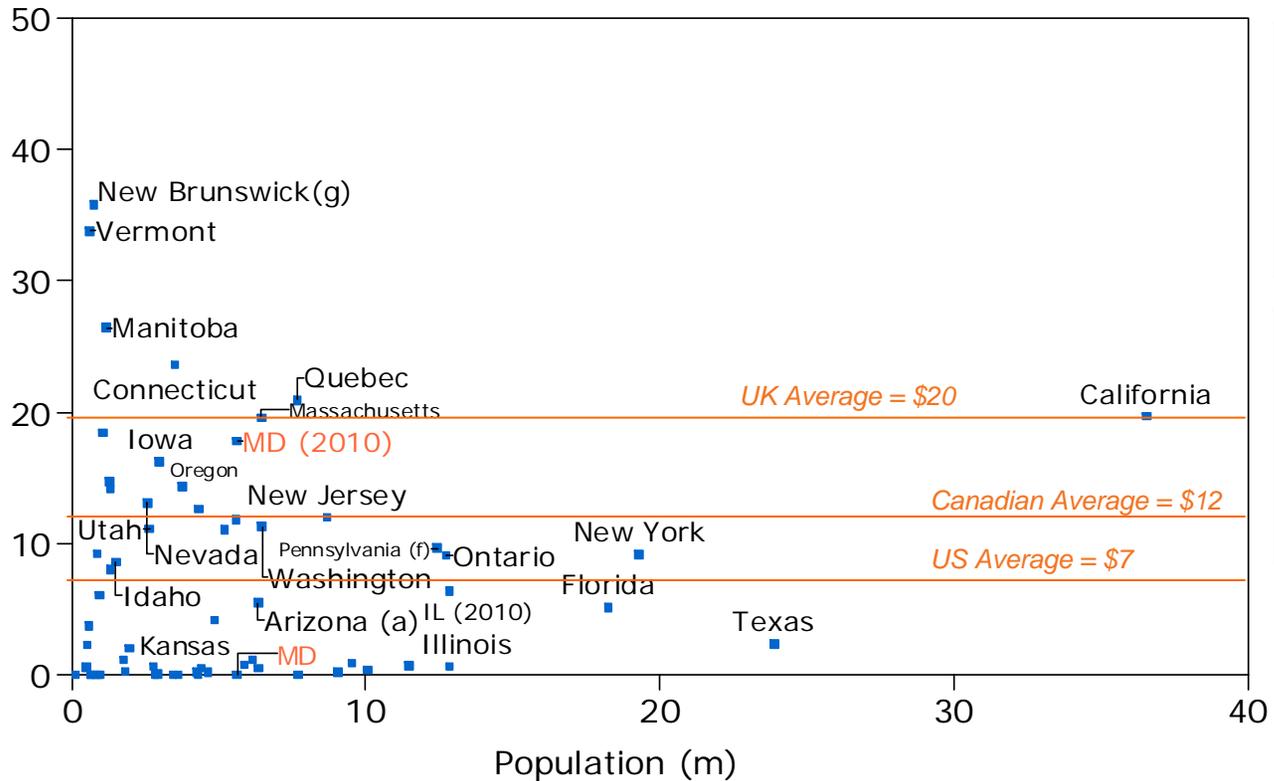
- The US & Canada lag the rest of the world on CO2 management
- To hit IPCC goals for management of CO2, we must reduce emissions by 80% below 2000 level (1.18GT of CO2) by 2050

Source: http://www.ucsusa.org/global_warming/science/emissionstarget.html



North American states and provinces are starting to invest money (~\$2bn in 2007) in energy efficiency

\$ per Capita (2007)



Pennsylvania will significantly increase its investment as a result of recent legislation

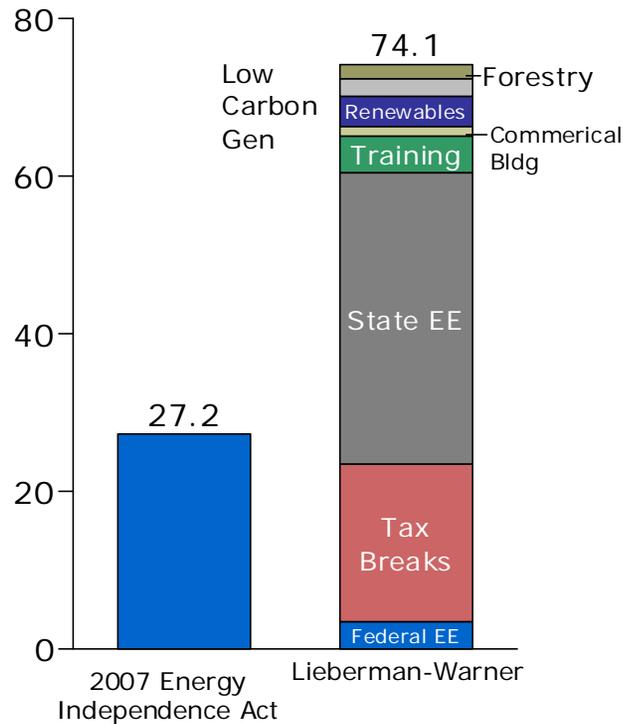
It is believed that funding across all states and provinces will have almost doubled (\$3-4bn) by end 2008

- According to KEMA, state specific efficiency annual funding is at the \$3.6 to \$4 bn level in 2008 and trending upward
- Average EE in 2007 per capita was approximately: \$7 (US), \$12 (Canada), \$20 (UK)
- US investment was highly variable: CT investment per capita is 10x that of TX
- Federal funding could add more than \$70bn incremental funding in the US market if legislation is passed (2010/11)

Future US federal funding could provide states with more significant resources – up to \$75bn p.a.

The Lieberman-Warner Climate Security Act of 2007 has approximately \$3trillion of provisions in it -- the bill is expected to become more active in 2009 and is likely to gain traction with an Obama administration coupled with a democrat controlled Congress. The time frame for some of these provisions extend to 2050.

US Funding (\$B p.a.)



Elements of the proposed bill (split over 40 years), include:

- Transition assistance, \$190bn to fund training of energy efficiency and renewable energy workers
- Tax relief based on energy costs to consumer, \$800bn
- State Programs in:
 - Efficiency (local electricity & gas) to protect versus increased costs, promote low carbon energy, and stimulate energy efficiency (\$91bn)
 - Energy Efficiency and Conservation in recent Energy bill funded, \$136bn
 - State incentives for energy efficiency, low carbon generation, etc, \$566bn
- Energy Efficiency:
 - Commercial buildings (new & retrofit) \$5bn
 - High efficiency building equipment & appliances, \$51bn to retailers/distributors
 - Renewable energy paid to generators, \$150bn
 - Incentives for low carbon generation, \$92bn
 - International forestry, \$68bn (excl. value of offset credits)

Note: The 2007 Energy Independence act has been passed but not funded yet. We are investigating how we might access these funds.



Consideration of local conditions should influence energy efficiency program design

Gas

Consumption

	Low	High
High	<ul style="list-style-type: none"> ▪ Focus on low income customers (100% subsidy) ▪ Furnace and water heater incentives ▪ Weatherization & insulation 	<ul style="list-style-type: none"> ▪ Focus on highest consumers of gas ▪ Some low income programs (100% subsidy) ▪ Heavy subsidy on high efficiency gas chillers
<u>Price</u>	<ul style="list-style-type: none"> ▪ Below average subsidy ▪ Increase regulation of buildings, furnace and water heater efficiency standards 	<ul style="list-style-type: none"> ▪ Very high subsidy level for all gas products ▪ Regulation of business and residential sector
	Low	

Electricity

Consumption

	Low	High
High	<ul style="list-style-type: none"> ▪ Major lighting campaign ▪ Balanced program (appliances, HVAC, weatherization) ▪ Focus on low income 	<ul style="list-style-type: none"> ▪ Material subsidy for low income <u>and</u> mass market – focus on AC ▪ Heavy EE chiller incentives, data centres ▪ Incentives for lighting, other
<u>Price</u>	<ul style="list-style-type: none"> ▪ Increase regulation of buildings, AC, lighting and appliance efficiency standards ▪ High cost to incent changes 	<ul style="list-style-type: none"> ▪ Very high subsidy level for all electricity products ▪ Regulation of appliances, lighting, business and residential sectors
	Low	

If grid capacity / stability constrained:

- *Heavy subsidy for peak shifting EE in Business markets
- *Demand Response (“double down” if overall consumption an issue)
- *Support smart metering & time of use tariffs (esp. for SME and large residential)



There are some universal principles that should be considered in all energy efficiency program design

1. Set clear objectives – do you want to peak shift, help low income families or simply reduce demand?
2. Ensure that administration is simple
 - Do not break funding into too many pieces (e.g. >4 administrators)
 - Contractor collection of rebates rather than direct consumer rebates helps to lower administrative cost / burden (and for partially subsidized products, contractors will focus on customers with the most to gain with new EE equipment)
3. Provide material funding for the program
 - Average US spend on EE programs was approximately \$7 per capita in 2007 but leading edge programs spend \$40 per capita each year
 - A cost of \$.50-.80 per KWh saved suggests an annual electricity EE budget for MD of approximately \$300-500m p.a.
4. Access federal and other funding in your area (including Clinton Climate Initiative)
 - The 2007 Energy Independence bill has authorized approximately \$27B p.a. of EE funding – a significant portion of which is likely to be administered at the state level
5. Allow for competition in delivery of energy efficiency measures
 - Use example of UK CTA
6. Encourage local government to work with energy efficiency suppliers to match resources with target customers
7. Keep the list of eligible EE measures narrow and focused
 - 5-10 measures for residential programs
 - <10 measures for commercial
8. Always have an innovation clause
 - It is unlikely that all effective measures will be identified at the beginning of the program design
 - Also, technological progress should provide new EE solutions
9. Provide long term certainty for potential EE contractors
 - Program effectiveness traditionally dips near the end of a program period
 - The strongest contractors may not participate if the government commitment to EE is short term (e.g. only 3 years of funding)



Pennsylvania might consider a number of program elements to achieve its goals

Peak Shift

- Expand demand response program for large businesses to address near term grid issues
- But importantly, offer a “double down” program where any DR participant can double their payment if funds are re-invested in EE / permanent peak shifting solutions

Overall Demand Reduction

- Offer CFLs to all customers through retail partners and other programs
- Set material incentives (e.g. 25%+) for major measures such as weatherization and HVAC
- Ensure M&V to demonstrate value delivered for EE investment

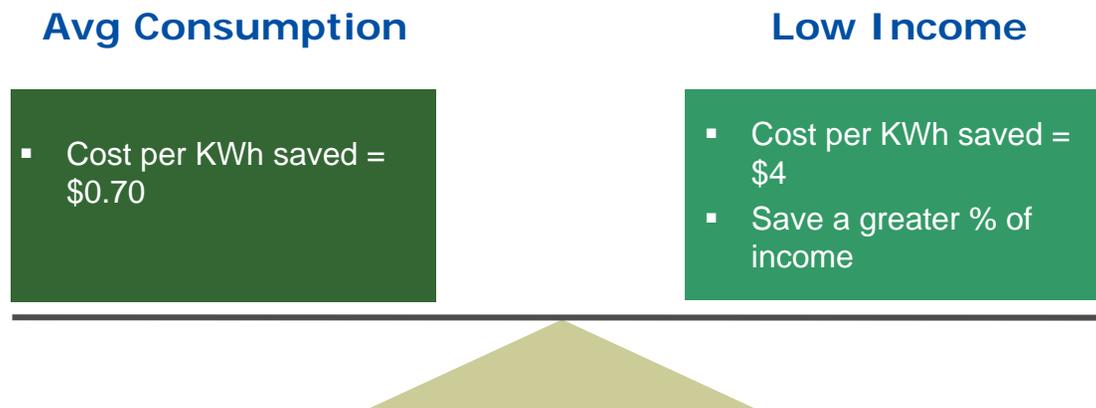
Reduce bills for low income

- Provide CFLs to all customers
- Offer audits and ~100% subsidies to 50% of low income homes (168k) over 7 years
 - Require weatherization wherever applicable
 - Reduce low income bills by an average of 15-20%
- Specifically design campaigns to target elderly customers
 - They are more responsive and engaged in EE than other demographic groups



When assisting low income families is among the top priorities, special steps will need to be taken on cost

- Investing state funds in upgrading low income homes is virtually the only way this group will get relief
 - Major investments like HVAC and weatherization are out of reach for this group
 - Funding will need to be near to 100% to allow low income families to improve efficiency
 - However, the cost per KWh saved is about 6x the cost to see a similar reduction in an average household



- The low income group, however, provides a natural limit on the size of budget (number of households at 175% of poverty)
 - Funding goes to those who need it most first
 - However, grid capacity issues and overall demand reduction goals will not be achieved as quickly



One group that will merit particular attention is the elderly low income group

- The elderly are particularly vulnerable to energy issues
 - Fixed income
 - Health issues
- They are also a politically active group with a strong interest in public policy
 - AARP
 - Other
- Older customers are particularly focused on the energy efficiency issue
- This is a sub-group that is much easier to target than the general low income population – in UK campaigns, they have proven especially responsive to energy efficiency offers



Response from those in need is significant

- Negotiated with government to extend regulatory credits to all over 70s
- Ran article in the Express on 10 January 2008
- Received about 5,000 calls in the first week
- More than 1,170 insulation surveys booked off of a single article

ADVERTISEMENT FEATURE

INSULATE FOR 2008 - TOTALLY FREE!

Amazing British Gas giveaway for the Over 70's



BRITISH Gas are offering over 70s the chance to save on their bills and safety with a massive offer. The only insulation should take no longer than half a day.

Getting the insulation for free could save you around £200. That's what it would normally cost to put in cavity wall and loft insulation on a typical three bedroom semi. You get it FREE! You will also save around £200 a year on average on your energy bills - thanks to the insulation. Having insulation can add value to your home and should improve your rating in the new Energy Performance Certificate.

To find out if you qualify call British Gas now. Simply make an appointment with an approved British Gas installer and they'll measure to assess your walls and loft. If your property is suitable they'll be able to arrange a time to come and do the work. It's simple and stress free. **FREE! Call 0845 605 2535 and quote EXP today.**

Help the environment and save energy and money with heat saving, insulation.

CUT UP TO A THIRD OFF YOUR ENERGY BILLS

Want to know how your home could save energy and how you could save up to a third* off your energy bills?

By getting your own energy audit, you can identify where you get the most from your energy and where you waste it. This means you can save up to a third* off your energy bills by taking up energy efficiency measures.

It can include everything from getting a new boiler to draughtproofing, changing your lighting, using energy efficient appliances, saving water, and so on. Only with an energy audit can you find out what's best for you.

FIVE WAYS YOU COULD SAVE £££'s**

Here are five top tips from British Gas to help you save energy and money...

1. By using the smart meter you can see how much energy you are using and when you are using it. This means you can save up to a third* off your energy bills by taking up energy efficiency measures.
2. By getting a new boiler you can save up to a third* off your energy bills by taking up energy efficiency measures.
3. By getting a new boiler you can save up to a third* off your energy bills by taking up energy efficiency measures.
4. By getting a new boiler you can save up to a third* off your energy bills by taking up energy efficiency measures.
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WHO QUALIFIES?
If you're aged over 70 then British Gas will include you in the offer. For the other offers you'll need to be on one of the following benefits and be on a social housing or privately rented property. You may also get the insulation whatever age you are. Attendance allowance, council tax benefit, disability living allowance, disability pension, housing benefit, income support, job-seeker's allowance, pension credit, tax credit, universal credit, and working tax credit - income related part.

British Gas

Call today **0845 605 2535** and quote **EXP**



Direct Energy

Subsidy levels can vary but the most successful programs tend to put material funding toward EE

- Austin Energy ,TX: A Home Performance with ENERGY STAR® Rebate covers up to 20% of the cost of certain improvements—up to \$1575. Bonus rebates up to \$650 for weatherization
- FPL ,FL: Air conditioning rebate of \$140 - \$1,930, depending on system size and efficiency rating
- Columbia Gas of Ohio: proposed subsidies for furnaces ranging from \$200-\$1000
- Long Island Power Authority, NY : Cooling & heating \$250-\$600
- Through CL&P and the Connecticut Energy Efficiency Fund, offers up to a \$500 incentive for installing an ENERGY STAR® central air conditioning or heat pump system.
- Vermont Gas - Furnace Retrofit: 1/3 of total retrofit cost (~\$1300)

Source: www.dsireusa.org; company websites



Best Practices

- **Provide financial incentives** is key to inducing market actors to seriously consider the core program message (i.e., that supply-side or demand-side actors benefit economically by selling or purchasing high efficiency AC products). Ability to offer attractive financing encourages customers to take action to help reduce their energy bills while enhancing their comfort of their home.
- **Using findings from energy audits** to “steer” customers towards their other prescriptive equipment programs, and demand response programs. Ensures the right measures will be implemented in the most cost effective way and minimize customers energy bills.
- **Focus greater attention on performance and installation quality**, particularly in the areas of insulation, HVAC, and lighting controls. Common among programs targeting split systems is the recognition that maximum efficiency is achieved by properly matching, sizing, and commissioning systems, including proper refrigerant charging.
- **Ease of Participation** - Simplifying program processes contributes to rapid ramp up. Examples include online application processes; utilization of barcode tags and barcode reading devices; random, rather than universal, inspection protocols; and robust information systems for program tracking and management.
- **Broadly communicating the benefits of and opportunities for energy efficiency** Cooperative advertising with big box retailers (Home Depot, Lowe’s, Costco) has been very successful in marketing the Single Family Rebate Program. Retailers pass on program information to customers through their marketing channels. About 100,000 customers were reached through the 377 retailers targeted in 2002. (CA Single Family EE rebates)



WHO IS CENTRICA?

Centrica is a leading integrated energy company, sourcing and supplying gas and electricity, and providing energy services, using their strong brands to succeed in chosen markets in the UK, North America, and Europe.

Where we operate



- Head Office
- British Gas Services
- Centrica in Europe
- Centrica Energy
- Direct Energy



CENTRICA BUSINESS UNITS



Gas and electricity production, trading, commodity sourcing, risk management



Rough gas storage facility



Gas, electricity, home services



Energy supply business joint venture in Belgium



Focus on electricity supply to small and medium size enterprises in Spain



North America natural gas, electricity, home services



CENTRICA KEY FACTS

- ❑ Formed 11 years ago by de-merger of British Gas
- ❑ \$32.8 billion annual revenue
- ❑ Over 32 million customer relationships
- ❑ Approximately 34,000 employees
- ❑ Sales average over two products per household
- ❑ S&P “A” Credit Rating
- ❑ Strong Cash Flow & Financial Position



WHO IS DIRECT ENERGY?

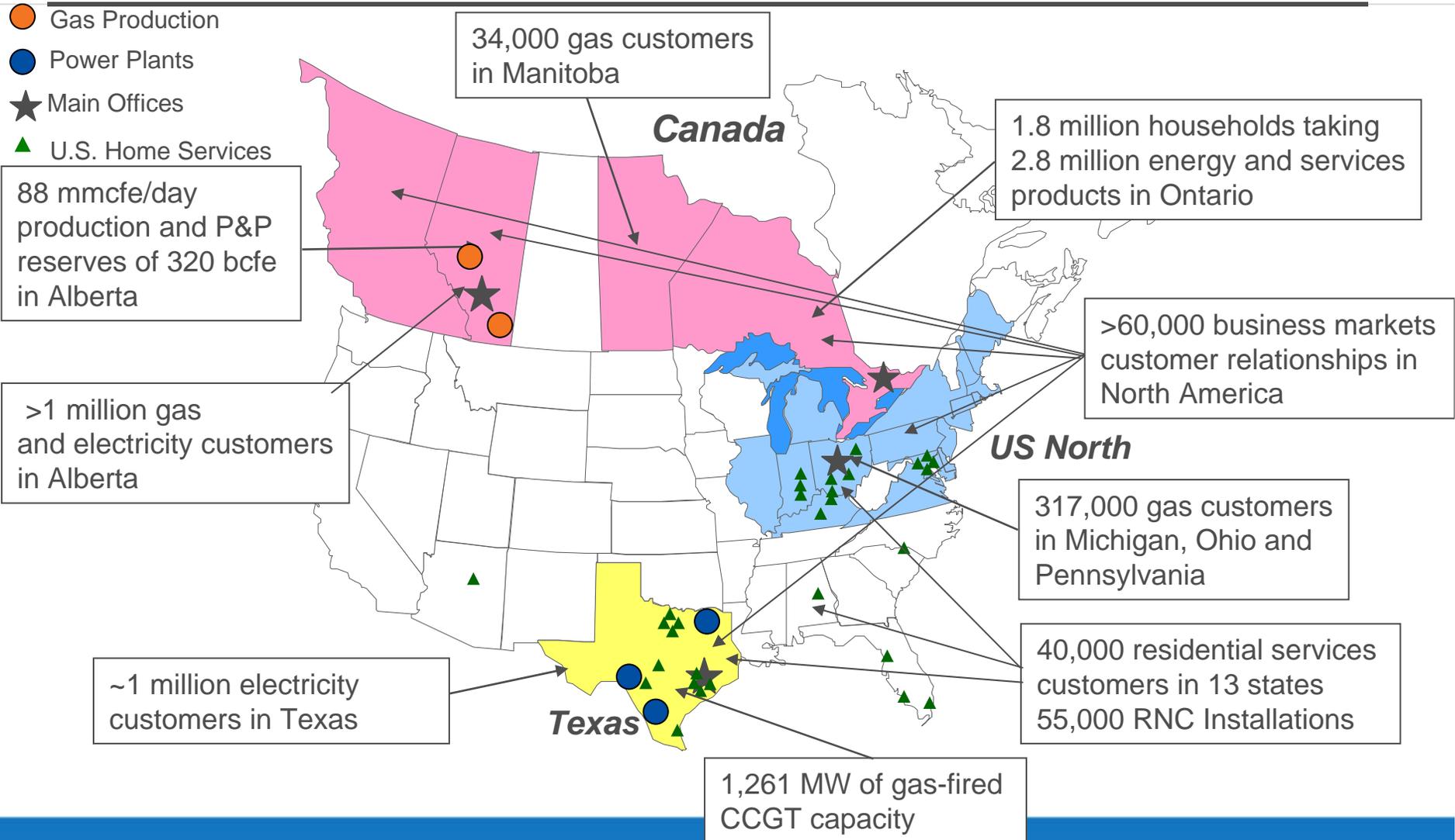


Direct Energy is one of North America's largest energy and energy-related services providers with more than 5 million residential and commercial customer relationships.

- Provide Energy & Services to Residential & Business Customers in Texas, the North & East of the US, & Canada.
- We Own & Operate Approximately 3,000 Natural Gas Wells In Alberta, Canada .
- In Texas We Own Three Gas-Fired Power Plants & Have Power Purchase Agreements Totaling 813MW Of Wind Power.



DIRECT ENERGY NORTH AMERICAN FOOTPRINT



TRADES WE CONDUCT in US Home Services



HVAC Residential New Construction (RNC)



HVAC Service & Consumer



Sprinklers



Plumbing
Residential New Construction (RNC) & Service

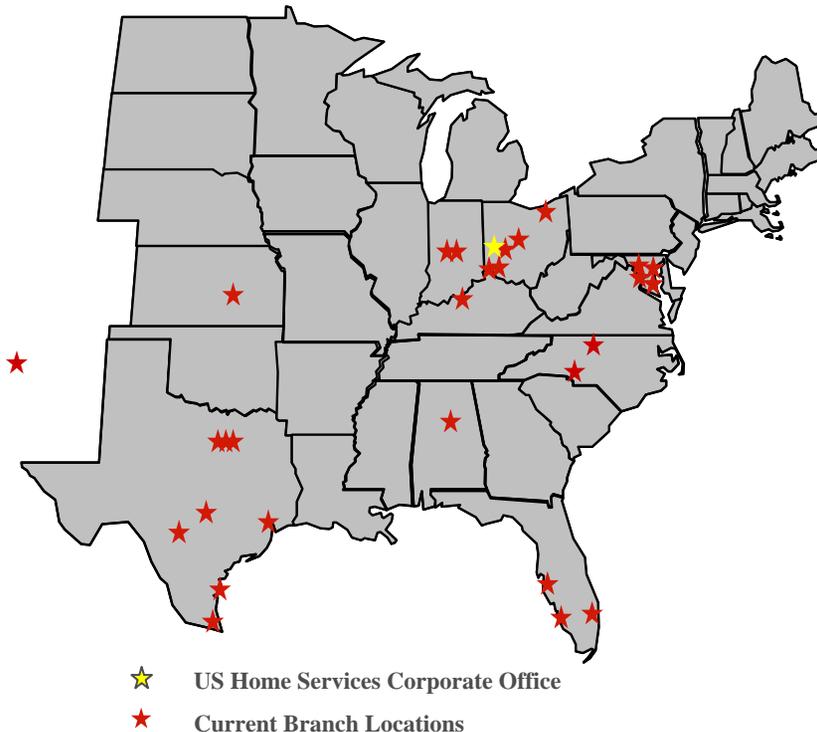


Fireplaces



US Home Services

Market Leading Platform



- Formerly Residential Services Group, Inc.
- Acquired by Direct Energy, October 12, 2004
- One of North America's largest residential HVAC/plumbing installation and service platform
 - ✓ 22 Operating Divisions
 - ✓ 27 Locations / Facilities across 11 states
 - ✓ 1,700 employees
 - ✓ Dedicated pool of installation subcontractors
- Low-cost, highly consistent business model
- Integrated operations with standardized operating procedures since the early 1970's
- Superior financial results relative to large-scale peers
- Significant competitive advantages relative to smaller competitors
- Strong recurring cash flow from new residential installation business
- Opportunity to grow repair and replacement revenue

