

RESNET – San Diego, 20 Feb, 2007



Overview



- *2006 - The Year in Review*
- *New Home Programs in Canada*
- *Energy Star New Homes*
- *Attached Units*
- *Labeling in the GWN*

2006 in Review



- *Liberals sign Kyoto*
- *Targets 6% below 1990 by 2012*
- *Achieves 35% increase by Dec 2005 (US 24%)*
- *EGH 1997 existing homes, A,B audit (100 pt)*
- *Conservative minority Jan 2006*
- *Cancels EGH May 2006*
- *Announces Clean Air Plan Oct 06*
- *Announces Eco Energy Feb 2007*
- *Environment top concern of electorate*
- *Election in 2007 on Kyoto and Environment?*

2006 in Review



- *Canadian RESNET formed*
- *Ontario based now*
- *To expand to existing homes and other provinces in 2007*
- *For energy evaluators / inspectors working with the home building industry in Canada*
- *To advocate and develop a professional, private sector, sustainable business model*
- *To apply US RESNET tools and standards*

History – R2000



- *R2000 - 1983 to present*
- *Computerized analysis*
- *1.5 ACH50 & HRV, CSA F326*
- *NB, NF, MA and other provinces*
- *Attrition rate is high*
- *ON 60 last year*
- *400 in whole country*
- *$\frac{1}{4}$ of 1% of all housing starts*

History – New Housing Programs



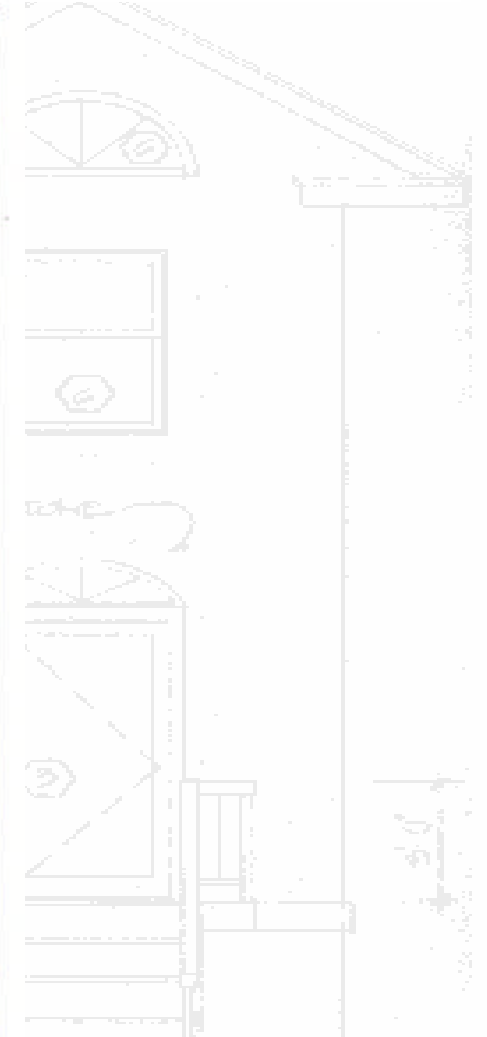
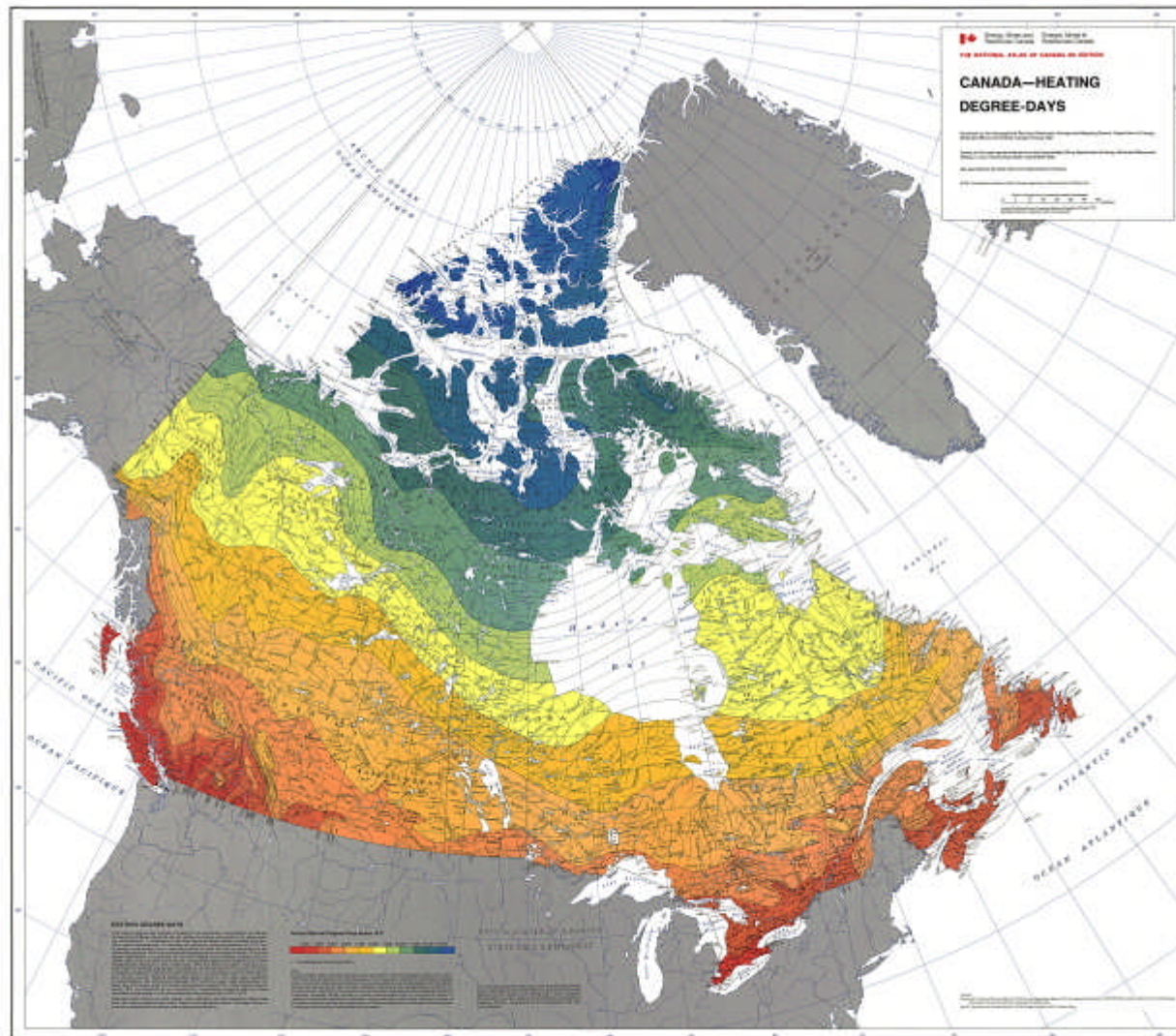
- *QC - Novo Climate*
- *AB, BC- Built Green w/ EGH*
- *MA - Man. Hydro Power Smart (prescriptive R2000 w/ EGH 80 alternate, \$900 credit to F.L. washer or \$600 off elec. bill)*
- *ON - ENERGY STAR New Homes*
- *SA - >ESNH*

ENERGY STAR New Homes
Ontario = Big



- *E/W = NY PA, OH, MI, WI, MN*
- *N/S = CA, OR, WA, BC, AL*
- *415,000 sq. miles*
- *250,000 lakes*
- *12,000,000 people (~40%)*
- *85,000 housing starts / year (~40%)*
- *> 90% in South*
- *$\frac{1}{2}$ in GTA*
- *Cold Winter Climate (s)*

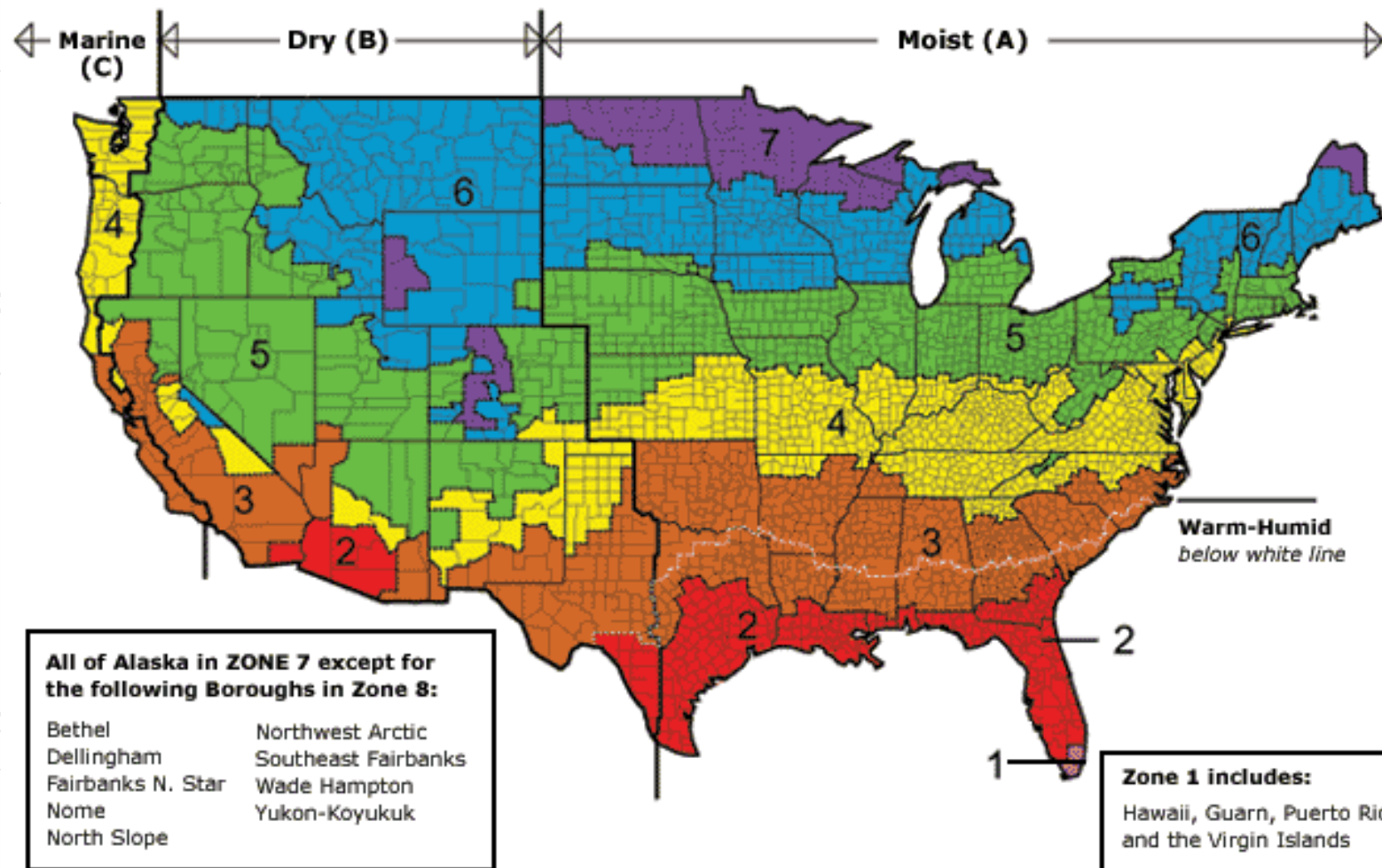
ENERGY STAR New Homes Ontario Context - Climate



ENERGY STAR New Homes Ontario Context - Climate



Map of DOE's Proposed Climate Zones



ENERGY STAR New Homes Ontario Context



- *Wood frame construction*
- *> 95% w/ Basements*
- *Forced air heating*
- *AC 40% homes*
- *Until 2007, Ontario Building Code inferior to IECC zone 5*
 - *Non low e windows*
 - *R8 Basement insulation to 2 ft BG*
 - *No air tightness control*

ENERGY STAR New Homes Ontario Context



- *Program announced 12 January, 2005*
- *Two year "Pilot"*
- *1000 homes in 2005*
- *4500 homes in 2006*
- *New Version 3, April 2007*



- *Delivery Agent in Ontario For NRCan Programs is EnerQuality*
- *Similar to US Provider but has exclusive for Province*
 - *Quality Assurance*
 - *Training Delivery*
 - *Marketing*
 - *Technical Support*
 - *Reporting to NRCan*

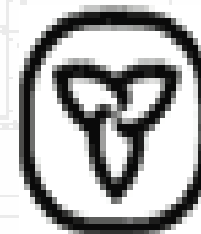
ENERGY STAR New Homes Sponsors & Leaders



Canada 



Cement Association of Canada



Ontario



uniongas

A Duke Energy Company

ENERGY STAR New Homes Compliance



1. *Sign agreement*

2. *Select energy efficiency measures*

Packages & Trade-Offs

or

EGH Software

3. *Field inspection by Qualified inspector*

Individually

or

1/3 Sampling

4. *Label compliant homes*

A blue rectangular label for an ENERGY STAR Qualified Home. It features the Energy STAR logo at the top left. To the right of the logo, it says "AN ENERGY STAR® QUALIFIED HOME". Below this, there are five white rectangular boxes for the following information: "ENERGY STAR Climate Region:", "Manufacturer:", "Plant Name/Location:", "Manufacturer's Serial #:", and "Date Manufactured:". At the bottom, there is a small text block stating: "This home has been independently verified to meet ENERGY STAR's strict guidelines for energy efficiency. Each ENERGY STAR qualified home can keep 4,500 lbs of greenhouse gases out of our air each year." and the website "www.energystar.gov".

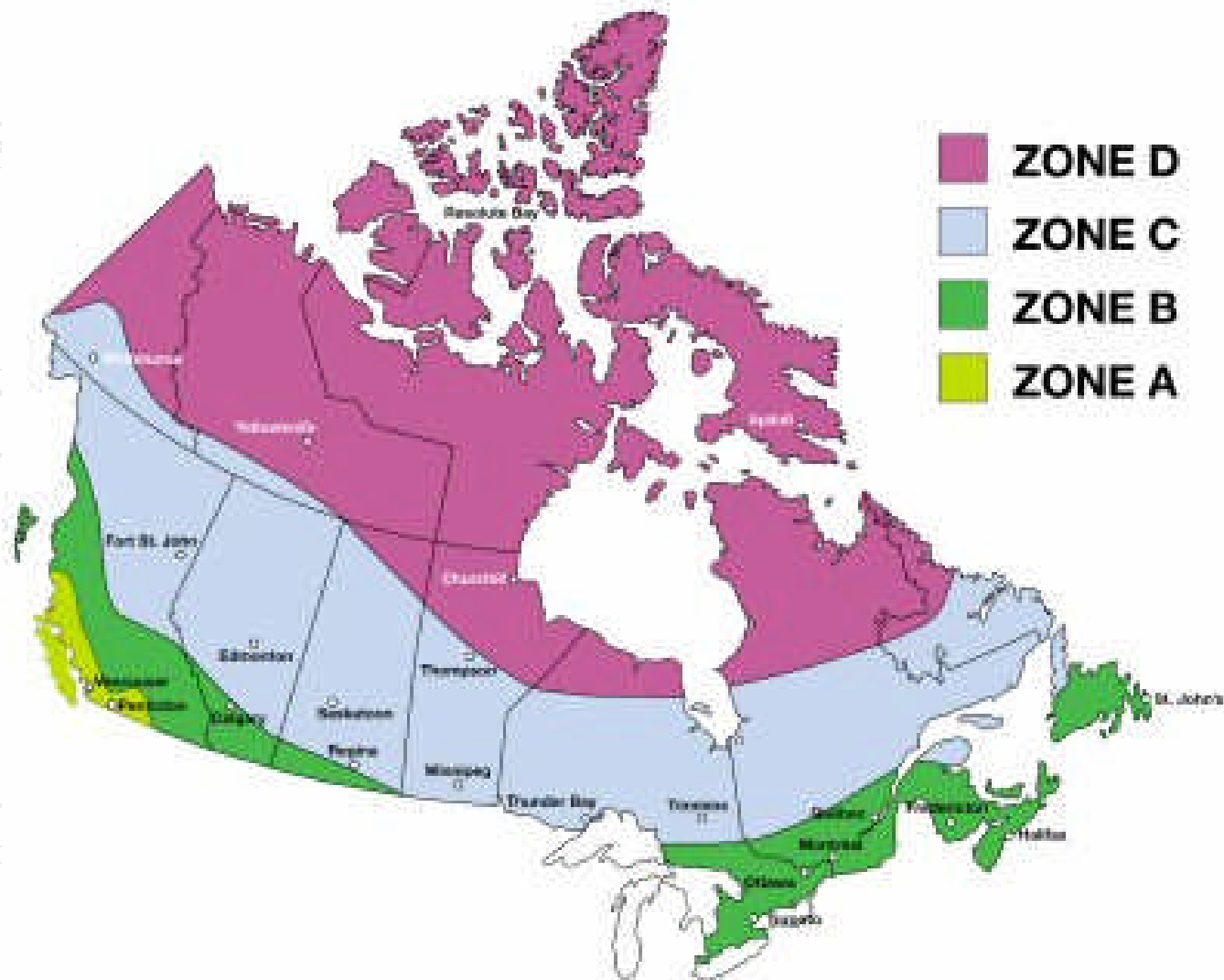
ENERGY STAR New Homes
Core BUILDING PACKAGE
South < 9000 DDF



- *R40 ceilings w/ attic*
- *R31 ceilings w/o attic*
- *R31 exposed floors*
- *R19 + 5 walls, or eq
(framing, SIPS, ICF)*
- *R12 basement walls full height or eq.*

- *Trade-Offs for Main Walls R19+5*
- *Substitute:*
- *HRV or tankless water heater, and*
- *2x6 wd w/ R22 or*
- *2x4 wd w/ R12 + 7.5 or*
- *2x6 steel w/ R20 + 7.5*

ENERGY STAR New Homes Windows & Patio Doors



ENERGY STAR New Homes Windows & Patio Doors

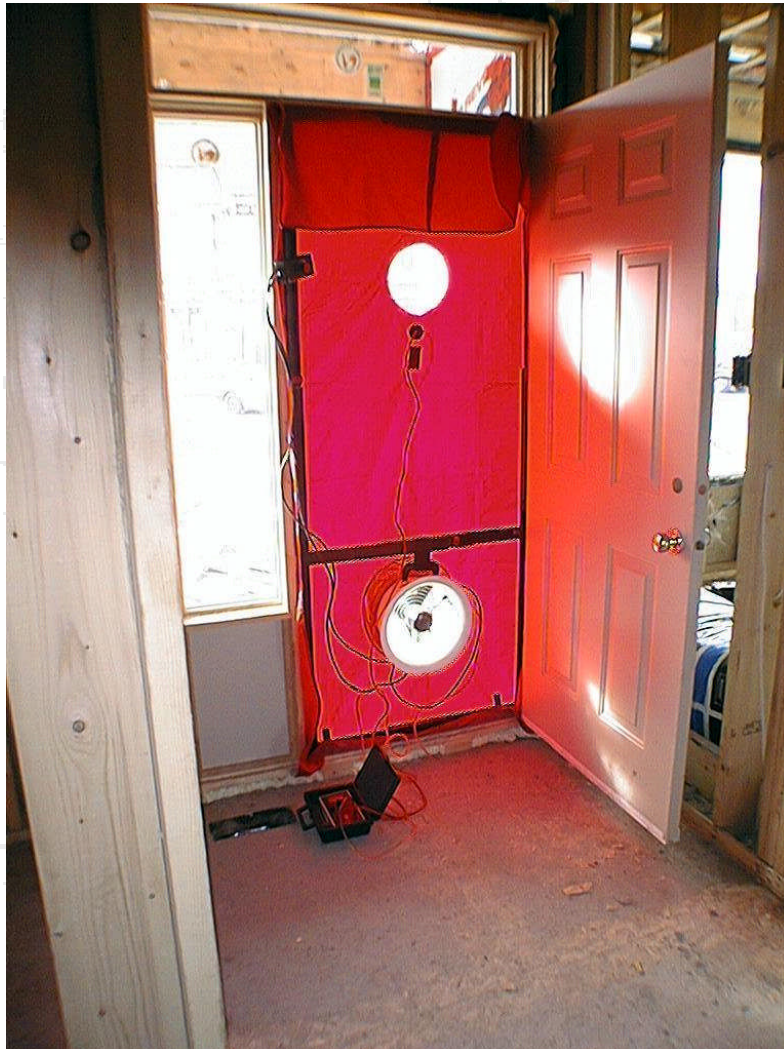


- *Canadian Energy Star Windows*
- *U-Value by NFRC 100 or CSA A440.2*
 - *Zone A (<3500 DDC) - U 0.35*
 - *Zone B (<5500 DDC) - U 0.32*
 - *Zone C (<8000 DDC) - U 0.28*
- *Or ER by CSA A440.2*
- *15 ft² window area exempt*
- *Zone C windows if G.T. 15% boundary wall area*
- *>15% wall area if zone C in South, zone D in North*

ENERGY STAR New Homes Main Walls - South



ENERGY STAR ONTARIO New Homes Air Leakage Control



ENERGY STAR ONTARIO New Homes Air Leakage Control



- *Test required*
- *0.2 cfm50/ft²
(1 L/s/m²)*
- *CAN/CGSB 149.2 at 10 Pa*
- *2x the requirement of R-2000*
- *2.5 – 3.0 ACH50 in most houses with a basement*

ENERGY STAR ONTARIO New Homes
Mechanical Ventilation Required



- *Based on OBC 9.32 (old ASHRAE 62)*
- *PXF (Principal Exhaust Fan)*
- *15 cfm x (#bedrooms + 1)*
- *Central control for switching PXF*
- *Total Ventilation Capacity no less than 2 x PVC*
- *HRV optional*



- *Continuous operation of PXF & Forced air*
- *Interconnect required between operation of PXF & Furnace*
- *PVC surface mount fan < 1.5 sone*

ENERGY STAR New Homes Gas Heating & Cooling



- *All direct vent and non spillage*
- *Non direct combustion supply air to be closed when combustion off.*
- *90% ENERGY STAR furnace*
- *85% ENERGY STAR boiler*
- *DV gas fireplace*
- *ENERGY STAR qualified thermostat*
- *Power vent hot water*
- *SEER 14 AC*

- *All ducts required to be within the heated boundary (common)*
- *Duct sealing required on square trunks (supply and return), supply take-offs, and joist lined returns in basement*
- *Duct sealing is otherwise not a code requirement in Canada*

ENERGY STAR New Homes Electric Heating



- *Electric resistance or ASHP*
- *R50 ceilings*
- *R22+7 main walls*
- *R15 basement walls*
- *Triple Low e windows (Zone D)*
- *0.92 EF water heater*
- *ETS may be introduced w/ TOU rates*

ENERGY STAR ONTARIO New Homes Electrical Savings Required



- *Targets by CFA*
 - *Over 1940 ft² - 1000 kWh / yr.*
 - *Over 1300 ft² - 800*
 - *Less than 1300 ft² - 600*
-
- *Wide range of eligible technologies:*
 - *Simple one page worksheet*

ENERGY STAR ONTARIO New Homes Electrical Savings



- *Furnace w/ ECM - 600 kWh*
- *Furnace w/ PSC low speed vent - 100*
- *HRV w/ ECM motor - 200*
- *ES bathroom fans - 50 ea.*
- *HRV w/ dedicated sup & ex - 600*
- *CFL / T5 / T8 lamps - 40 ea.*
- *Halogen lamps - 20 ea.*

ENERGY STAR ONTARIO New Homes Electrical Savings



- *ES AC 100% size - 100 kWh*
 - *w/ all CFL - extra 100*
 - *w/ ECM furnace - extra 100*
 - *w/ ERV - extra 100*
 - *w/ SHGC windows <0.4 - extra 300*
- *ES Appliances*
 - *Front load washer - 450*
 - *Top load washer - 150*
 - *Fridge - 150*
 - *Dishwasher - 100*

ENERGY STAR ONTARIO New Homes Electrical Savings



- *Electricity Use Monitor - 800 kWh*
- *Green Receptacles/ All off switch - 800*
- *Drainwater Heat Recovery - 800*
- *Gas Pre-piping stove, dryer - 100 ea*
- *Gas stove - 400*
- *Gas Dryer - 600*
- *Solar Air panel - 600 ea*

ENERGY STAR ONTARIO New Homes

