# USAID SEE Regional Energy Demand Planning Initiative

# The Merits of Improved Energy Efficiency in the Building Sector

SEE-REDP Steering Committee and USAID/Hellenic Aid Cooperative Energy Program Kick-off Meeting

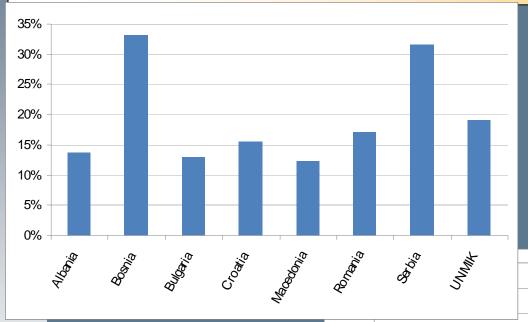
Athens, Greece

May 19-20, 2008



[Presented by Pat Delaquil on behalf of the SEE-REDP Technical Working Group]

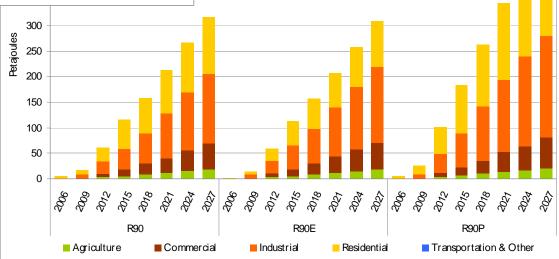
#### Energy Intensity Reduction and Energy Savings



Reduction in 2027 energy intensity, 16% for the region in the R90P scenario



Energy savings by sector for the region

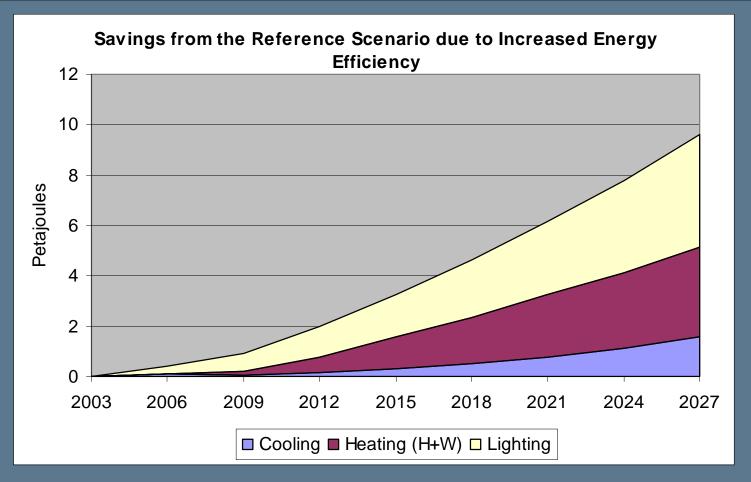


#### A Closer Look at Final Energy Savings in Commercial and Residential Sectors: Croatia

- Final energy savings most pronounced in:
  - Space and Water Heating
  - Lighting
  - Cooling
- No savings realized (at this stage) in:
  - Refrigeration efficient devices are too expensive, except for slight penetration in the R90E scenario
  - Limited building shell improvements (only insulation) owing to lack of data
  - Public lighting, cooking and others lack of improved devices options (in the current models)



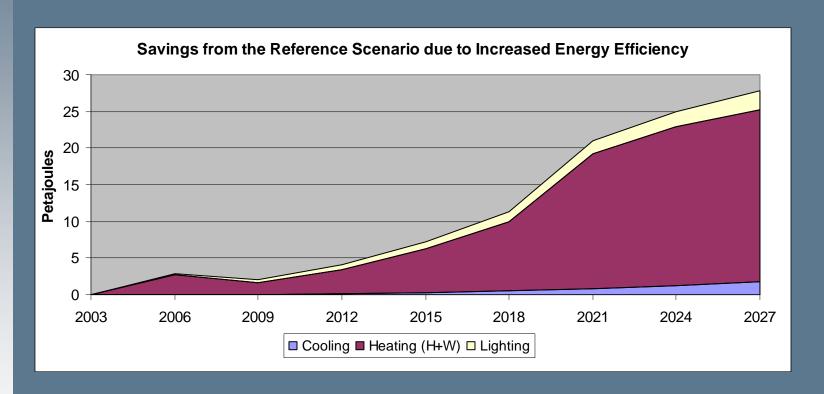
## Commercial Sector Final Energy Savings due to Increased Energy Efficiency: Croatia





Given access to higher efficiency devices a total savings in final energy consumption of 4.4% can be realized in 2015 and 9.5% by 2027.

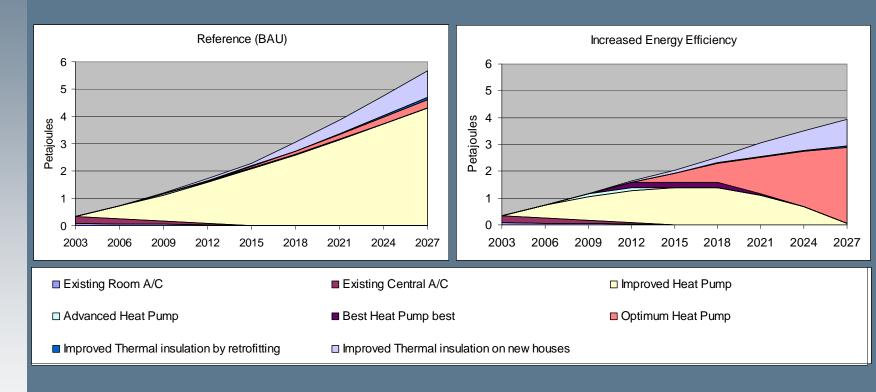
# Residential Sector Final Energy Savings due to Increased Energy Efficiency: Croatia





Given access to higher efficiency devices a total savings in final energy consumption of 7.8% can be realized in 2015 and 27.1% by 2027.

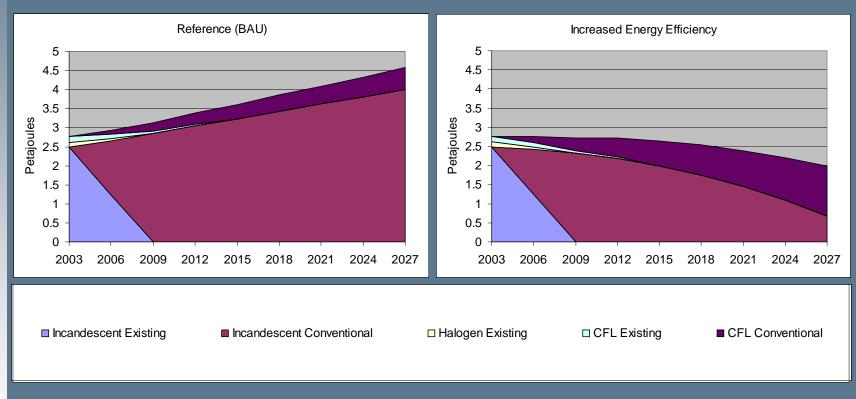
#### Penetration of Improved Cooling Devices in Residential Sector: Croatia





Given access to higher efficiency air conditioners an 11.2% reduction in electricity for cooling can be realized in 2015 and a 30.5% reduction by 2027.

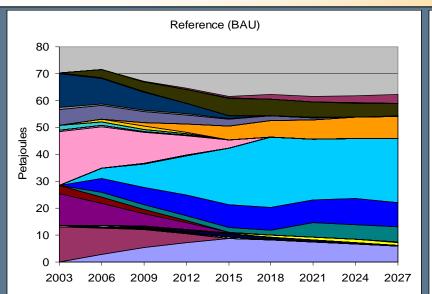
#### Penetration of Improved Lighting Devices in the Residential Sector: Croatia

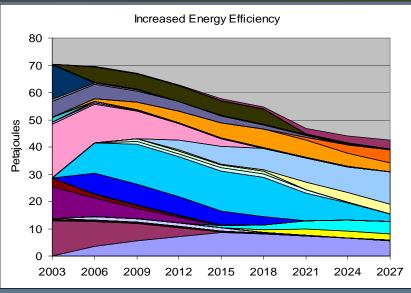




Given access to higher efficiency lights a 27% reduction in electricity for lighting can be realized in 2015 and a 57% reduction by 2027.

## Penetration of Improved Space Heating Devices (and Insulation) in Residential Sector: Croatia





- Biofuel Stove Conventional
   Coal Stove Conventional
   Electric Furnace Conventional
   Electric Heat pump Improved
- Electric Furnace Existing
- Gas Stove Conventional
- ☐ Gas Furnace Improved
- Gas Furnasa Estation
- Gas Furnace Existing
- LPG Stove Best
- Low temp heat Furnace Conventional
- Low temp heat Heat exchanger Existing
- Oil Central Furnace Existing
- Thermal Insulation Retrofit Conventional

- Biofuel Furnace Existing
- Coal Stove Improved
- Electric Heat pump Conventional
- □ Electric Heat pump Best
- Electric Stove Existing
- Gas Furnace Conventional
- ☐ Gas Stove Best
- Gas Stove Existing
- LPG Furnace Existing
- Low temp heat Heat exchanger Conventional
- Low temp heat Heat exchanger Existing
- Solar-Elc Heat pump Conventional
- Thermal Insulation New houses Conventional

- Biofuel Stove Existing
- Coal Furnace Existing
- Electric Stove Conventional
- Electric Central heat pump Best
- Gas Furnace Conventional
- □ Gas Stove Improved
- Gas Furnace Best
- LPG Stove Conventional
- LPG Stove Existing
- Low temp heat Furnace Improved
- Oil Stove Existing
- Solar-Gas Furnace Conventional





Access to higher efficiency space heating devices results in a 5.1% reduction in energy use in 2015 and a 34% reduction by 2027.