



ROLES OF BUILDING OWNERS, BUILDERS AND GOVERNMENTS IN GREEN BUILDINGS/ 业主、建筑商 与政府 在建设绿色建筑的作用

Presentation to Low Carbon Earth Summit
Low Carbon Green Architecture (Part 8-5)
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低碳地球峰会

低碳绿色艰涩（8-5部分）

10月23日于大连

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OUTLINE OF PRESENTATION / 演示大纲

- Importance of Green Buildings
 - Roles for Building Owners
 - Roles for Builders
 - Roles for Governments
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 - Conclusions
 - References
- 绿色建设的重要性
 - 建筑商的作用
 - 机构之间的关系
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IMPORTANCE OF GREEN BUILDINGS / 绿色建设的重要性

- Represent 40% world energy consumption
(50% if include imbedded energy in materials) ¹
- Up to 90% of building stock is old in developed countries²
- Building operations critical – similar buildings can consume 3x energy due to poor operations³
- Appliances and equipment also important – consumes 45% of residential electricity in developed countries ⁴
- 建筑物用的是全球能源损耗的40%（如加上材料里的嵌入能源，所用的能源变为50%）¹
- 在发达国家中，新建筑只是所有建筑物的1%²
- 建筑物如运作不佳，用电量比运作良好的建筑物高出3倍。所以建筑物的运作是节省能源的关键³
- 在发达国家中，家电和设备的用电量是一般住宅所耗的45%⁴



POTENTIAL FOR GREEN BUILDINGS / 绿色建筑的潜在性

- World Business Council for Sustainable Development's vision is net zero energy buildings⁵
- Architecture 2030 calling for carbon neutral buildings by 2030⁶
- Canadian Green Building Councils goal is to reduce verified GHG emissions from 100,000 buildings and 1 million homes by 50% by 2015⁷
- 世界企业永续发展委员会把净零能源列为它们的远见⁵
- 建筑2030 (Architecture 2030) 呼吁2030年之前建筑物的温室气体排放是零⁶
- 加拿大绿色建筑委员的目标是在2015年前把一万栋大厦和十万户家庭所排出的温室气体减半⁷



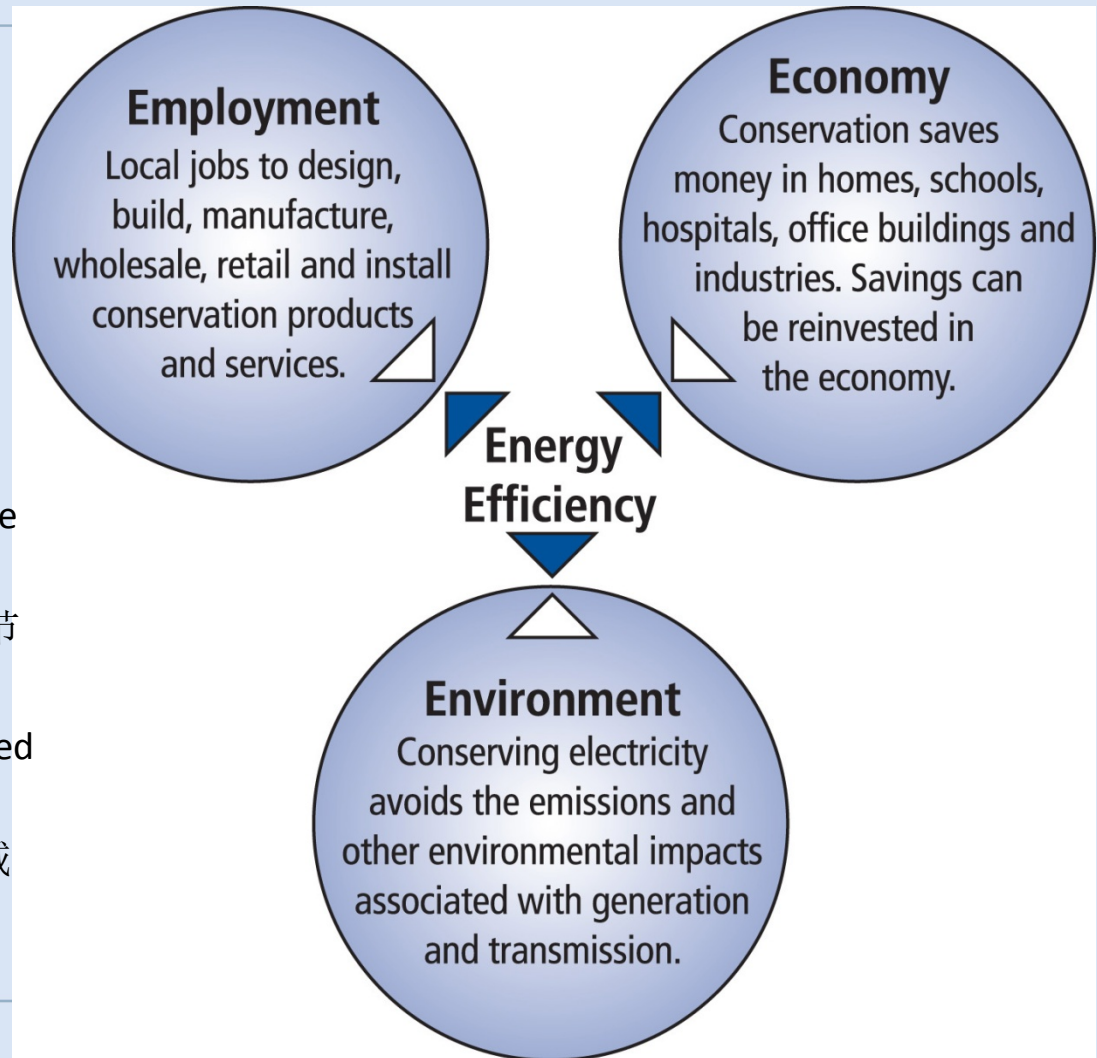
BENEFITS OF CONSERVATION / 节约能源的益处

The Three “Es” / 三“3”⁸

- **Employment** benefits: labour-intensive, local jobs
- **就业益处 (Employment)**: 劳动密集型、本地工作
- **Economic** benefits: cost-effective for households and makes private sector more competitive
- **经济益处 (Economic)**: 效益能为居民带来节省, 令私人环节更具竞争性
- **Environmental/health** benefits: reduced GHGs, acid rain, smog
- **环境 (Environmental) 健康益处**: 减少温室气体、酸雨、烟雾

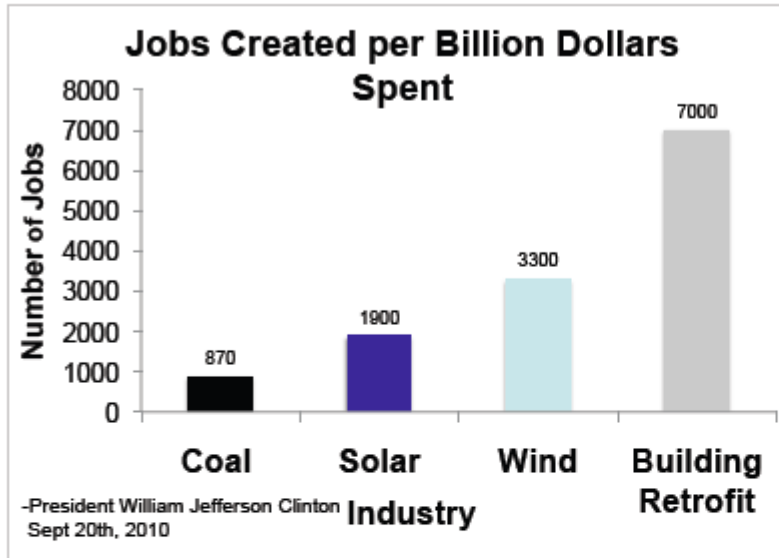
Other Countries

Security of Supply/
其大国家
供应的保证





EMPLOYMENT BENEFITS / 就业益处 ⁹



Empire State Building Retrofit:

- 8 month design phase, 60 ideas considered, 8 projects (financial and environmental ROI).
- 3.1 year payback
- Initial \$20 million, 38% energy reduction, \$4.4 million savings annually.
- Creation of hundreds of jobs

- www.esbnyc.com

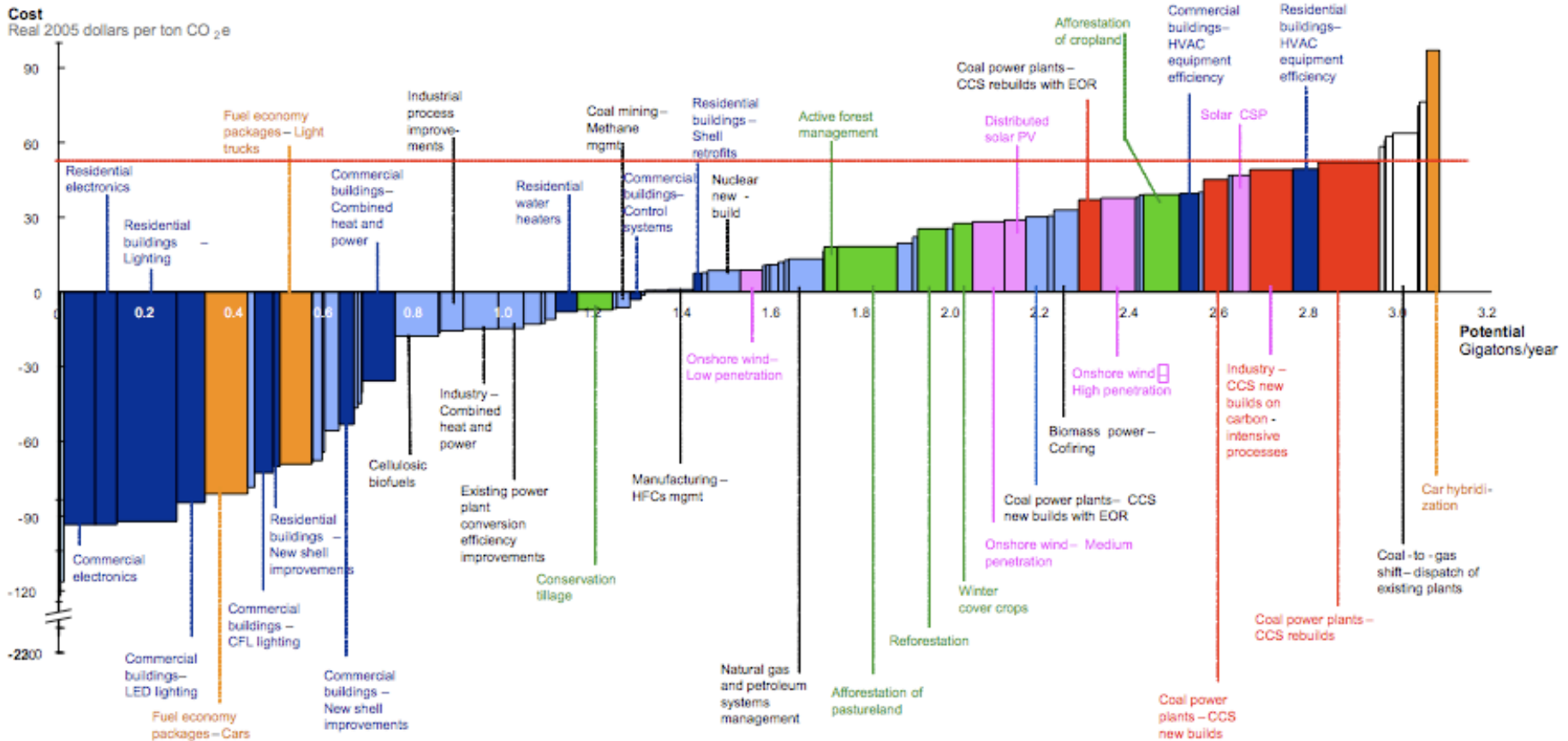


ECONOMIC BENEFITS / 经济益处¹⁰

Example of GHG Abatement Cost Curve



U.S. curve indicates opportunity set in the U.S. is widely distributed (U.S. mid-range abatement curve – 2030)





ROLE OF BUILDING OWNERS/建筑商的作用

- Specify new buildings be green (eg LEED) and renovate existing buildings (LEED EB)
- Publically celebrate successes (employees, customers, suppliers, competitors, community)
- Consider using Energy Performance Contract to transfer technical/economic risk to energy service company
- Ensure optimal operations through continuous training and monitoring
- 指定新绿色建筑物（例如LEED认证）以及改造旧建筑物（LEED EB）
- 公开赞扬员工，客户，供应商，竞争对手，社区的成就
- 考虑利用合同能源管理来转移对能源公司的技术和经济上的风险
- 利用进修和监测来确保最佳操作



ROLE OF BUILDERS/建筑商的作用

- Become recognized leader in green buildings to enhance reputation
- Ensure employees and subcontractors receive continuous training
- Actively promote green buildings and encourage owners to consider certification
- 成为绿色建筑领导者以提升声誉
- 确保员工及分包商得到持续进修
- 推广绿色建筑和鼓励业主考虑认证



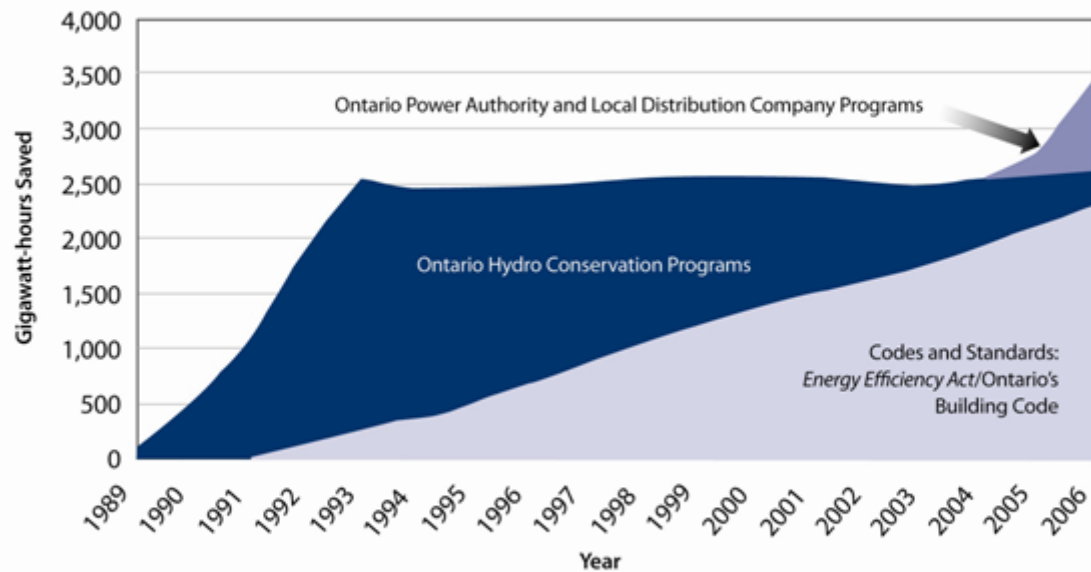
ROLE OF GOVERNMENT/政府的作用

- Develop/enforce Building Codes with minimum energy performance standards (prescriptive or performance)
- Establish rate-payer based funding mechanism to finance code development/enforcement and incentives for voluntary programs
- Ensure proper Evaluation, Measurement and Verification of incentive programs (5% program budget)
- Set/monitor progress toward aggressive conservation targets
- Set example with own new and existing buildings
- 研制/执行有最低能源表现标准（规范或性能）的建筑规范
- 建立以付款人为基础的筹资机制来提供资金给能源表现标准的研制/执行以及自愿奖励计划
- 确保奖励计划有正确的评估，计量和验证（计划预算的5%）
- 设置/监测严格节能目标的进度
- 利用属于政府的新和旧的建筑来建立模范



ROLE OF CODES AND VOLUNTARY PROGRAMS IN ONTARIO/规范和自愿性计划在安大略省的作用¹¹

Impact of Codes and Standards in Ontario



Source: Ontario Power Authority, 2007



ROLE FOR OTHERS/其他角色的作用

- Architects, designers, engineers, contractors, consultants, program managers, code officials, energy service companies:
 - Promote/lead Integrate Design Processes (IDP)
 - Ensure employees/contractors receive continuous training
 - Actively promote green buildings and encourage owners to consider certification
 - Advocate/monitor role taken by governments
- 建筑师，设计师，工程师，承建商，顾问，计划经理，规范官员，能源公司
 - 提倡/领导整合设计流程（Integrated Design Processes（IDP））
 - 确保员工及分判商得到持续进修
 - 推广绿色建筑和鼓励业主考虑认证
 - 提倡/监测政府在绿色建筑的作用



BEYOND BUILDINGS/除建筑以外

- Green the electricity generation system with solar, wind, biomass, geothermal, etc.
- Promote and become active in move to smart electricity grid (smart meters, time of use rates, demand response programs, distributed generation)
- Promote smart transportation systems (public transit, use of social networking)
- 用太阳能，风力发电，生物质能，地热能等等的技术把电力制造系统绿色化
- 推动走向智能电网（智能电表，时段使用率，需求响应计划，分布式发电）
- 推广智能交通系统（公共交通，社区网）



RELATIONSHIPS BETWEEN ROLES/机构之间的关系

- Complementary role of voluntary leadership programs (eg LEED) and mandatory energy efficiency provisions in Building Code
- Understand, work together and mutually support each others roles
- Actively promote move to green buildings in community, country and world
- 互补自愿领导计划（例如LEED）和强制在建筑规范里的能源效率规定
- 不同角色应了解，配合和支持彼此的作用
- 对社区，国家以及全世界推广绿色建筑



CONCLUSIONS / 结论

- Need both voluntary programs and mandatory provisions in building codes
- Don't forget existing buildings and equipment/appliances
- Build capacity in own organization through training
- Support EMV and enforcement
- Remember operations and behaviour
- 建筑规范需要资源和强制性的规定
- 不要忘记现有的建筑，家电和设备
- 支持和强制评估，计量和验证
- 修来提高能力
- 记得管理和用电行为



QUESTIONS? /问题?



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