关于能源效率激励政策及其在能源政策中所占地位的最佳实践：一份提供给中国决策者的报告

Best Practices on Energy Efficiency Incentives and Their Role in Energy Policy: A Report for Decisionmakers in China

Beijing

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Economic Incentives are Almost Always Part of a Broader Package
经济激励几乎一直是众多解决问题的手段之一

- The package may be aimed at: **目的是：**
  - Developing a comprehensive energy policy **开发应用更广泛的能源政策**
  - Supporting a housing policy **支持住房政策**
  - Rationalizing economic forces on consumers and business **使针对消费者和商业活动的经济措施合理化**
- Incentives policies should complement other energy policies. **激励政策应对其他能源政策形成补充**

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Effectiveness of Incentives
激励手段的成效

- Tax incentives for energy efficiency have not been employed widely. **提高能源效率的税收激励尚未广泛应用**
  - Very few programs have been evaluated. **对很少的激励项目进行了评估**
- But evaluations of tax incentives and related managed incentives run by governments and utilities yield consistent results and recommendations. **但是对于由政府及公用事业部门实施的激励政策和管理性激励项目的评估得到了持续性的结果和建议**

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Summary of Recommendations
结论与建议

- Provide for positive interaction between energy codes, labels, and financial incentives.**使能源法规、标准、标识和财政激励之间产生积极的互动**
- Incentives should be based on performance and not cost, whenever possible.**不论任何时候，尽可能使激励手段基于性能而非成本制定**
- Energy performance goals should be ambitious enough to: **应确定远大的节能目标，这样可以**;
  - Minimize free ridership **使"搭便车"行为减至最少**
  - Control costs **控制成本**

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Summary of Recommendations
结论与建议

- Targets may be provided in several tiers. **可以使目标分几个等级来实现**
- Develop an administrative structure to oversee the awarding of incentives.**建立一个行政管理机构来监督激励项目的实施**
  - Oversight is needed to maintain integrity **需要监督来保证公正性**
  - Administration should not be burdensome **管理部门不应负担太重**
  - Compliance documentation should have market value **遵守要求的文档应有市场价值**
- Provide complementary programs for education, outreach, and marketing of the tax incentives.**提供教育、推广以及营销手段，作为激励政策的补充**

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Tax Incentives**财税激励**

Performance-Based**基于性能**	Cost-Based**基于成本**
Incentive depends only on meeting an energy target	Incentive depends only on how much you spend on energy efficiency
激励程度取决于要满足的某一节能目标	**激励程度取决于由于提高能源效率而导致的成本增加**

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Program Design and Administration
方案设计及管理

- Managed Incentives**管理性激励项目**
  - Change to respond to market **随市场情况而变**
  - Targets are moderately ambitious**目标适中**

- Long-Term Incentives**长期性激励项目**
  - Program design is fixed**方案设计固定**
  - Very ambitious targets **目标很高**

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Delivery Mechanisms
形成机制

- State agency grants or loans.**政府机构拨款或贷款**
- Tax incentives at national or provincial level designed by ministry staff.**由政府部门决定国家或地方的税收激励**
- State or national tax incentives fixed by legislation or decree.**通过立法或法令确定州级或国家级的税收激励**

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Administrative Mechanisms
管理机制

- Utility-run rebate programs.**公用事业部门实施的补贴项目**
- Private sector or non-profit programs.**私营部门或非营利部门项目**
- Provincial or national Energy or Environmental Agency administration of programs.**由地方或国家的能源或环境机构来实施项目**
- Finance Ministry processes applications.**财政部门处理相关申请手续**

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Funding Sources
基金来源

- General government revenues**一般性政府收入**
- Public Benefits Fund for utility customers**为公用事业消费者设立的公益基金**
- Carbon taxes or pollution taxes **碳税或污染税**
- Enhanced revenue collection from businesses**对企业增加征税**
  - This mechanism works automatically if businesses pay a tax on net profits.**若企业按净利润纳税该机制自动生效**

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Energy Policy Context
接下来的能源政策

- Energy codes or standards.**能源法规或标准**
- Informational labels **能效信息标识**
- Normative labels **标准化能效标识**

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Energy Policy Context II
能源政策二

- Managed incentives **管理性激励手段**
- Long-term incentives **长期激励手段**
- Information programs and energy efficiency demonstration centers**节能信息传播和节能示范中心**
- Research and development **研发**

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Why Evaluations Are Rare
为什么评估很少

- Most tax incentive programs are established by legislatures.**大多数激励方案由立法机关建立**
  - There is little political *benefit* in supporting a program that is effective, but **即使支持的项目效果不错，也几乎没有什么政治收益，然而**
  - There is great political *risk* in sponsoring a program that is found to be ineffective.**如果被证明资助项目的实施效果不好， 则会带来很大的政治风险**
- A negative evaluation could cause its proponents to lose face.**负面的评估结果使其资助方丢面子**

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Evaluations
评估

- But evaluation is necessary to refine program design.**但是评估对于确定方案设计来说是必要的**
- With a portfolio of many programs, it should not be embarrassing if some components work better than others.**随着大量方案的评估，某些部分比其他部分完成的好不应使人感到尴尬**
- A few programs have been evaluated rigorously and the results are very consistent.**有几个项目已进行了严格的评估，得到了一致的结果**

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Evaluation Results**评估结果**

- Programs based solely on cost have proven ineffectual or even counter-productive.**仅基于成本的项目已被证明无效甚至起反作用**
- Programs based on both costs and minimum energy performance criteria appear anecdotally to have achieved at least modest success. **据说，不但基于成本而且基于最低能效标准的项目至少已经取得了一定的成功**
- Managed programs based on performance and accompanied by strong promotion have been very successful.**得到大力支持的基于性能的管理性项目被证明非常成功**
  - Best practices report from American DSM experience**从美国**DSM**项目经验得出的最佳实践** (www.eebestpractices.com)

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Energy Codes and Standards Are One of the Most Important Policies for Energy Efficiency **能源法规和标准是提高能效最重要的政策之一**

- Savings exceed 6,000 MW in California today and 14,000 MW as of year 2010 (compared to about 45,000 MW of total electricity).
- **今天加利福尼亚节约的电力负荷超过**6000MW，2010**年将达到**14000MW（**较于**45000MW**的总电力容量来说**）**
- Fuel cost savings are at least twice the cost of efficiency.
- **燃料成本节约至少是效率提高成本的两倍**

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Labeling and Information: Normative Labeling & Recognition Programs
标识和信息：标准化的标识和认证方案

- The EU requires that all buildings be rated by 2006.**欧盟要求截至**2006**年所有建筑都要进行能效水平分级**
- Russia and Kazakhstan require energy ratings as part of their energy codes.**俄罗斯和塔吉克斯坦要求将能效分级作为其国家能源法令的一部分**
- For new homes, the U.S. EnergyStar® Program established a performance-based target of 30% savings compared to a model national energy code.**对于新建建筑，美国能源之星项目建立了与中等国家级节能标准相比能够实现节能**30%**的基于性能的节能目标**
- It has grown rapidly to a market share of almost 10%, mostly without subsidies.**在几乎没有补贴的情况下，该项目已迅速发展到市场占有率接近**10%

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Labeling and Information: Normative Labeling & Recognition Programs
标识和信息：标准化的标识和认证方案

- For public buildings, the U.S. "Advanced Buildings Benchmark™" provides a *design* target, and the "EnergyStar®" Program recognizes *measured* low energy use/m^2
- **美国"能源之星"只承认节能市场最高端**25%, **按每平米能耗费用最低的评估。**
  - Low energy cost is only weakly related to energy efficiency
  - **但最低能耗费用与能效只有微弱的联系。**
- The U.S. Green Buildings Council's LEED™ program recognizes a variety of "green" practices beyond just energy efficiency
- **美国绿色建筑协会的《绿色建筑评估认证标准体系》**LEED™**除节能以外，还承认其它多种"绿色" 的实践。**

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Efficiency Programs Complement Energy Codes 节能项目是能源标准法规的补充

- Programs can encourage compliance with the code by motivating designers项目能通过激励设计者鼓励遵守法令的行为
- Programs can encourage production of efficient equipment locally.项目能够鼓励当地高效节能设备的生产
- Programs can encourage early compliance with China's new lighting code and efficiencies beyond the minimum in the code. 项目能够鼓励早期遵守中国的新照明节能标准和超过最低能效标准的行为

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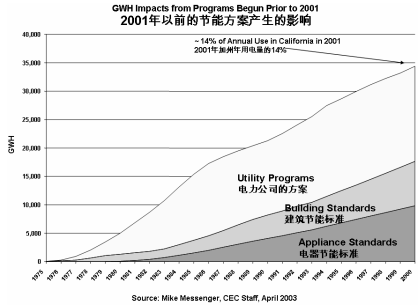
Utility-Sponsored Incentive Programs can Greatly Increase Energy Savings 公用事业单位资助的激励项目能够得到很好的节能效果



Source: Mike Messenger, CEC Staff, April 2003

Tax Incentives for Energy Efficiency Could Greatly Increase Savings
对提供能效水平的财税激励措施能够带来明显的节能效果

- Caution: Tax incentives seldom been used: this discussion is partly theoretical. 说明：税收激励很少应用，该讨论从某程度上讲是理论上的。
- But, evidence from market transformation programs shows that properly designed tax incentives can promote more advanced technologies and larger energy savings. 但是，来自市场转化项目的证据表明正确设计的税收激励可以促进科技的进步及更大的能源节约

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Options for Tax Incentives
财税激励措施的选择

- Establish managed incentive programs, similar to those operated in the UK, the state of Oregon, and Sweden.建立管理性激励项目，类似于在英国、俄勒冈和瑞典实施的那样
- Establish long-term incentive programs similar to the U.S. proposed law S. 680.建立长期激励项目，类似于美国S680提议法案那样
- Managed and long-term programs are complementary.管理性及长期性项目互补

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Principles for Well-Designed Tax Incentives良好的税收激励项目的设计原则

- Most everyone supports voluntary or incentive-based programs as an alternative to mandatory or code-based programs.相对于强制性或基于法令的项目来讲，大多数人愿意选择自愿性或基于激励手段的方案
- But no one wants to pay for the programs. Incentives can become very expensive unless they are designed in a careful way. 但是没有人愿意为项目付钱。若不小心设计，激励手段可能会代价非常高
- Therefore, program costs should be minimized by setting high goals and modest incentives.因此应通过制定高目标和适当激励以使项目成本最低

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Principles for Well-Designed Tax Incentives II良好的税收激励项目的设计原则：二

- Workable: based on program experience. 可行的：基于项目的实施经验
- Verifiable: assure that energy savings are real and can establish market value. 能够验证的：确保能节约能源并制造市场价值
- Incentives should be competitively neutral and sustainable in the marketplace.在市场上，激励手段应保持竞争和可持续发展

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Energy Policy Principles
能源政策原则

- Achieve significant energy savings compared to code or normal practice**与法令或常规做法相比要取得可观的能源节约效果**
- Tie incentives to energy performance**使激励手段与节能性能相结合**
- Transform the market so the same incentive is not required in perpetuity**推动市场转化，以至于未来不再需要激励**

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Managed Incentive Program Design: Principles **管理性项目设计：原则**

- Work with markets (customers, builders, developers, manufacturers, distributors, etc).
- **与市场打交道（包括消费者、建筑商、开发商、生产商、分销商等）**
- Be flexible: adapt to conditions.
- **具有灵活性：适应环境**
- Focus on customer needs and value.
- **注重消费者的需求和价值观**
  - Customer may be more interested in side effects of efficiency (increased comfort, reduced maintenance costs, better productivity) than energy cost savings.
  - **相对于节约电力支出而言，消费者可能会对节能措施的其他效果更感兴趣（提高舒适度、降低维护成本、提高生产率）**

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Managed Incentives for Buildings
对建筑节能的管理性激励

- Different program designs are needed for:
- **需要为以下建筑设计不同的计划：**
  - New residential buildings
  - **新建住宅**
  - Retrofitted existing residential buildings
  - **改造现有住宅**
  - Equipment and lighting systems in residential buildings
  - **住宅中的建筑设备和照明系统**
  - New commercial buildings or new construction in commercial buildings
  - **新建商业建筑或商业建筑中的新建项目**
  - Retrofit commercial buildings
  - **改造商业建筑**
  - Specific equipment
  - **特殊设备**

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Experience from Programs Shows that:
计划实施的经验表明：

- Programs must be simple to understand and administer.
- **计划必须简洁明了，易于理解和执行**
- Programs can encourage savings beyond mandatory codes.
- **计划能够鼓励超过强制性规范标准的节能**
- Programs can establish conditions for improving mandatory codes.
- **长期计划可以为改进强制性规范创造有利条件**

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Problems and Solutions to Energy Efficiency Are Surprisingly Similar Around the World
世界各国的能效问题和解决方法有惊人的相似之处

- The same types of stakeholders are involved.
- **涉及同类利益各方**
- Their concerns are similar.
- **关注的问题相似**
- The issues are not much different in planned economies than in market economies, or in developed countries or regions compared to developing ones.
- **不论计划经济，还是市场经济，不论发达国家或地区，还是发展中国家或地区，面临的问题都大致相同**

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Summary Recommendations for Managed Incentive Programs
管理性激励项目的总结和建议

- Provide for accurate reporting and tracking of results **提供项目结果的准确报道和追踪**
- Require third party verification of the quality of installation of energy efficiency measures.**需要第三方对节能设施的效果进行验证**
- Base incentives on performance, with a fixed incentive paid per home or per square meter that meets and energy target.**基于性能进行激励，按照每户或每平米的能耗水平衡量是否满足节能目标，并给予固定的激励**

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Advantages of Long-Term Incentives: The Ability to Make Long-Term (~5-year) Commitments
长期激励的优势：能够制定长期（约5年）计划

- Long-term commitments encourage investment in producing the highest international technologies, and developing even better ones.
  长期计划可以鼓励投资，促进国际上最先进技术的产生，甚至开发更先进的技术
- They also encourage professionals to invest in advanced education to design higher efficiencies.
  还可以使专业人员投资先进的教育方法，以设计出更高的能效水平

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Disadvantages of Long-Term Incentives: The Requirement to Make Long-Term (~5-years) Commitments
长期激励的弊端：制定长期计划的要求

- A long-term commitment means that mistakes cannot be corrected.**长期计划意味着错误无法更改**
- Long-term commitments can become very expensive without careful program design.
  若没有精心的方案设计长期计划将付出昂贵的代价

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Structure of Long-Term Incentives
长期激励框架

- Set ambitious targets that are well within the top 1% of the current market **建立雄心勃勃的目标：1%的当前市场高端范围**
  - Lower targets should be incentivized using managed incentives or normative labels.**较低的目标应通过管理性激励或常规制度得以促进**
- Base the incentives on performance and not on cost.**使激励手段建立在性能的基础而不是成本基础上**
- Provide ample opportunities for review of program design.**为方案设计复查提供广阔空间**

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Structure of Long-Term Incentives II
长期激励框架二

- Establish incentives that are worth from 25% to 40% of the expected incremental costs of compliance**建立的激励手段应支持预期增益成本的**25%~40%
  - Expected incremental costs will be below today's costs.**预期的增益成本会低于当今成本**
  - Actual incremental costs are likely to be below expected costs due to increased competition and innovation.**由于竞争和创新，实际的增益成本可能会低于预期成本**

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Structure of Long-Term Incentives III
长期激励框架三

- Provide the incentive for 3-7 years and then plan to end the incentive**提供持续3－7年的激励，然后就要为结束该激励手段做打算**
  - A year or two before the incentive expires, the success of the incentive should be evaluated.
    在激励手段期满前一、两年，应评估该激励手段的效果
  - Consider whether a new long-term incentive should be established with a higher target.**考虑是否应建立目标更高的新的长期激励**

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Structure of Long-Term Incentives IV
长期激励框架四

- Specify clearly: **需要指出**
  - how to measure or verify that the energy use target is achieved, and **如何衡量或证实已达到节能目标**
  - who is authorized to certify that compliance has been achieved.**谁有权力证明相关要求已经得到执行**
- Make the compliance documentation useful in the marketplace **使项目文档在市场中发挥作用**
- Coordinate with other programs.**与其它项目协调**

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Incentive Options
可选择的激励手段

- Price-based Incentives **基于成本的激励**
  - The amount of the incentive is based on the money spent **激励的数量取决于费用的数目**
  - May be easier to specify**可以更容易的加以详细说明**
  - Administrative convenience – such as sales tax exemption or immediate depreciation**管理方便－比如销售税减免或直接折旧**
- Performance-based Incentives **基于性能的激励**
  - The amount of the incentive is computed based on the performance of the product**激励的数量建立在产品的性能基础上进行计算**
  - More difficult to specify correctly**准确的详细说明更加困难**

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Price-Based Incentives
基于成本的激励

- Tend to increase prices**使价格有增加倾向**
  - The same percentage of a larger price yields more incentive dollars**在同样比例下，更高的价格需要更多的激励**
- Tend to invite corruption**容易产生腐败**
  - Can increase price and give part back to consumer in form of sales incentive**会提高提供价格将部分激励转移给消费者**
  - Can decrease cost (not price) and quality because performance in not considered.**由于没有考虑性能，使成本（而非价格）及质量下降**

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Previous Experience
以往的教训

- Solar tax credit of the 1980s 20 **世纪80年代的太阳能利用财税激励**
  - 40% of purchase price up to $4,000 credit **补贴40%的购买价格，不超过4000美元**
  - System prices skyrocketed ($10,000) **系统价格猛涨**
  - Dishonest enterprises flocked to the market **没有信用的企业涌入市场**
  - Solar industry almost perished when tax credit expired in 1985 **到1985年激励措施结束时太阳能工业几乎衰亡**
  - Remaining solar industry just now recovering **留下来的太阳能工业当前也在恢复阶段**

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"The Sting" (Urban Legend)
惨痛的教训（都市传奇）

- Price of the solar system = $10,000 **太阳能系统的价格＝10，000美元**
- $4,000 tax credit from government 4000**美元的补贴来自政府**
- **Sales incentive**: Free, 1st-class, week-long trip to Bahamas (supposedly worth worth $3,000!) **销售激励：免费的一流的巴哈马一周游（假设成本为3000美元）**
- Actual system cost = $3,000 **实际的系统成本＝3000美元**
- Treasure pays for trip plus large profit **昂贵的旅行支付加上可观的利润**
- No assurance of claimed energy savings **不能保证所谓的能源节约效果**

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Policy Implications
政策含义

- The ***true*** market competitiveness of the product is decreased over time **经过一段时间后，真正的产品市场竞争减少**
- The consumer, Treasury and society get poor value for their investment **消费者、国家及社会的投资几乎没有得到收益**
- Dishonest vendors proliferate, forcing true entrepreneurs out of the industry **无信用的小商贩激增，将好企业从行业中驱赶出去**
- When the tax credit sunsets, the market for the product evaporates **当激励项目结束时，该产品的市场也消失了**

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Performance-Based Incentives
基于性能的激励手段

- Tend to increase competition**有促进竞争的趋势**
  - Lowest price per unit of performance results in the greatest incentive as a % of price**单位的节能效果的最低价格导致a%的价格作为最大激励成本**
  - Innovation and volume-driven profits become critical to success**创新及总量驱动利益成为成功的关键**
- Tend to reduce corruption **可以减少腐败**
  - Performance rules make cheating difficult **性能规则使欺骗行为变得困难**

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Policy Implications
政策含义

- The ***true*** market competitiveness of the product is increased over time **随着时间流逝，节能产品的市场竞争力会越来越强**
- The consumer, Treasury and society get much more value from their investment **消费者、国家和社会都将从他们的投入中得到越来越多的收益**
- Innovation and increased demand reduce the price of the product **带来技术进步，并导致节能产品价格越来越低**
- When the tax incentive is reduced or eliminated, the product competes favorably with its less efficient competition **当激励减少或者终止时，节能产品仍然保持竞争力**

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How Much is Enough?
应该给多大程度的激励呢？

- 25-50% of typical incremental market price appears appropriate **看起来25－50%的典型市场增益价格的激励是合适的**
  - Leverages the Treasury's (and society's) investment by 2-3 times **带动2~3倍的国家（及社会）的投资**
  - Requires consumer participation **需要消费者的参与**
- Less can be appropriate if savings (and barriers) are small **如果节能量（或者市场障碍）很小，较小的激励就可以了**

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How Much is Too Much
多大程度的激励就算高了呢？

- 75-100% of typical incremental market price is too much 75－100%**的典型市场增益价格的激励太高**
  - Wrong market transformation signal – devalues the product **错误的市场转化信号使产品贬值**
  - Little to no leveraging – less economic stimulus **很小的杠杆效应－很低的经济激励效果**
- Market for product may evaporate when tax incentive sunsets **当激励结束时，产品从市场消失**

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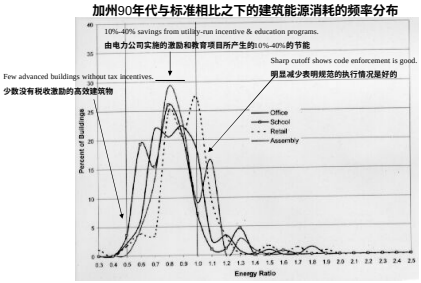
A Comprehensive Approach to Commercial Buildings: Status in California
商业建筑的综合措施：加州的状况

Frequency Distribution of Building Energy Use Compared to Code: California 1990's

加州90年代与标准相比之下的建筑能源消耗的频率分布



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A Model to Demonstrate These Principles: U.S. Proposed Law S. 680
表明这些原则的一个模型：美国S.680提议法案

- This bill is being considered by the U.S. Congress. The text of the bill is available at: **http://thomas.loc.gov/** and type 'S680' for "Bill Number"
- **美国议会正考虑该议案。该议案的内容可以从以下网址查到，敲入议案号S680即可**

47

How programs can complement long-term incentives
如何对长期激励形成补充

- Buildings don't perform as designed
- **建筑的节能性能没有设计时想象的那么好**
- Attention to improved on-site performance (low utility bills) can save even more energy while improving comfort
- **在提高舒适度的同时，对现场性能的关注（需要的资助不多）能够带来更大的节能效果**

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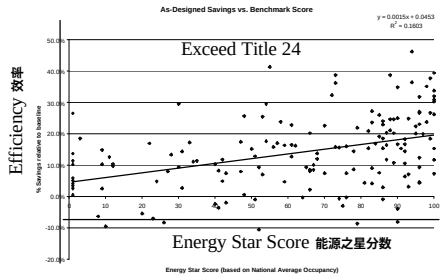
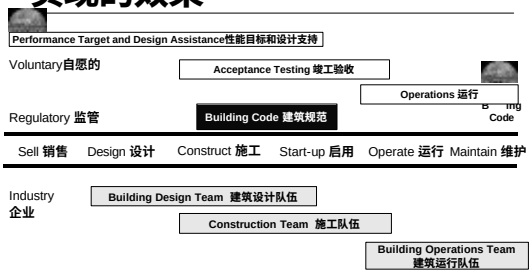
Simulated vs. Benchmark
模拟值与基准的比较



49

Achieving Performance
实现的效果



Courtesy of New Buildings Institute, Inc.

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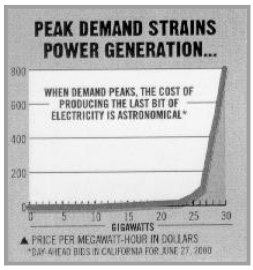
Motivations for a U.S. Energy Efficient Buildings Tax Bill:
美国节能建筑财税激励法案的制定动机

- **Reduce natural gas prices 降低天然气价格**
- **Assure electric peak reliability 保证用电高峰期的可靠性**
  - Physical Reliability (reduced peak loads) **物质上的可靠性(降低高峰期电力负荷)**
- **Emphasis on policies that work in the short run 强调在短期政策**

51

High Value of Averting Blackouts or Price Spikes
避免灯火管制或价格太高的重要意义？



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Contents of the Bill
议案的内容

- **Tax Incentives 税收激励**
  - Commercial Buildings.**商业建筑**
  - HVAC Equipment.**暖通空调设备**
  - New Homes.**新建住房**
  - Existing Homes.**既有住房**
  - Renewable Energy Sources.**可再生能源**
  - Combined Heat and Power (CHP).**热电联产**

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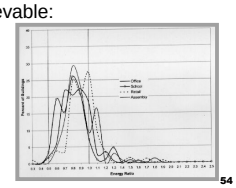
Commercial Buildings 商业建筑

- Tax Incentives are Provided for 50% Savings Compared to ASHRAE 90.1-2001 Baseline.
- **以**ASHRAE 90.1-2001 Baseline**为基准，激励手段要实现**50%**的节能目标**
  - 50% is ambitious but achievable:
  - 50%**的目标较高但仍可实现**



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Commercial Buildings II商业建筑二

- Commercial Buildings Includes Public Buildings Such as Schools as Well as Rental Housing. **商业建筑包括公共建筑如学校以及出租房屋**
- One-Third of the Incentive is Available Separately for Each of the Main Building Systems: 1/3**的激励可以独立应用在主要建筑能源系统的每个部分**
  - Envelope **围护结构**
  - HVAC **暖通空调**
  - Lighting **照明**

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Commercial Buildings III商业建筑三

- Incentive of a $\$2.25/ft^2$ (~$\$25/m^2$) deduction makes this incentive available to REITs. **每平方英尺减少**2.25**美元的刺激可以使这项激励在不动产投资信托中得以利用**
  - Corporate tax rate is ~35% **税率大约是**35%
- Incentives are available to all applicants through 2010. **到**2010**年前激励手段适用于所有的申请者**
- **There is no limit for the amount of money available for this incentive. 这项激励手段对于使用钱数没有限制**

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Commercial Buildings IV商业建筑四

- Flexibility for Credit Energy Savings from a Wide Variety of Technologies and Designs:**节能激励资金可以灵活地支持范围非常广泛的节能技术和设计**
  - Daylighting **自然采光**
  - Commissioning **设备的性能测试和改造**
  - Combined Heat and Power (CHP) **热电联产**
  - Renewables **可再生能源**
  - Semi-Conditioned Spaces **局部空调区域**
  - Low-Pressure Duct Systems **低压风道系统**

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Commercial Buildings V商业建筑五

- How Do You Qualify?/Who Benefits?**如何具有资格？谁将受益**
  - Third party inspectors are like California energy code consultants: a system that works.**第三方检查人员如加利福尼亚能源法规咨询公司：起作用的系统**
  - Calculations are simple and standardized.**计算简单且标准化**
  - Tax deduction goes to the company that owns the construction – could be tenant **建筑业主或者是承租人将从减免税激励政策中获益**

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HVAC Equipment I
暖通空调设备一

- Incentives for Air Conditioner Efficiency Could Help Avert Blackouts.**提高空调效率的激励手段会有助于防止出现拉闸限电**
  - Air conditioning is 30-40% of peak load. **空调占高峰电力负荷的**30－40%
  - Since air conditioners turn over every 18 years, rapid savings in peak power are possible. **既然空调每**18**年更新一次，在用电高峰期实现有效的节能效果是可能的**
  - The air conditioner industry can gear up to produce more efficient products in months. **数月内空调生产商可能加速生产更加先进高效的空调设备**

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HVAC Equipment II
暖通空调设备二

- Qualification levels for furnaces and water heaters as well as air conditioners represent much less than 1% of sales
- **达到标准的锅炉、热水器以及空调占销售量的比例还不到**1%

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Home Retrofits
住房改造

- Tax incentives are available on a sliding scale up to $2,000 per dwelling unit for homes that achieve 50% savings in heating and cooling.
- **对于在供热和空调方面实现节能**50%**效果的家庭，可以得到最高**2000**美元的资金补贴**
- Third-party certification of savings, based both on calculations and physical inspection, is needed.
- **节能效果需要第三方验证，同时进行理论计算和现场检测**

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New Homes
新建住房

- $2,000 tax incentives for homes reducing energy use by 50% for heating and cooling.**对于在供热和空调方面实现节能**50%**效果的家庭，可以得到最高**2000**美元的资金补贴**
  - Third-party certification is necessary to document the savings. **第三方对节能效果的验证非常重要**
- A lower threshold of 30% savings qualifies for a $1,000 incentive. **即使节能**30%**，也可以得到**1000**美元的补贴**
  - This incentive could become costly: it is included as a political compromise with home building companies. **这项激励可能成本较高：这是和建筑公司之间达成的一项折中方案**

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Conclusions
结论

- Tax incentives should work in coordination with energy codes, labeling, and DSM to promote the introduction of newer and better technologies.**税收激励手段应与能源标准法规、标识以及**DSM**项目相结合，以促进更新更先进技术的引进**
- Long-term tax incentives should target the very highest levels of efficiency.**长期财税激励政策应设定能效水平很高的节能目标**
- Tax incentives can be costly or counter-productive if not carefully designed.**如果缺乏精心设计，财税激励措施的成本将可能很高，甚至可能适得其反**

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