

**Energy-Efficiency Retrofits in the Commercial  
Sector: An Analysis of PACE Financing, On-  
Bill Repayment, and Energy Savings  
Performance Contracts**

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## INTRODUCTION

Tackling climate change has proven to be an elusive task because both financial barriers and political realities have soured otherwise promising potential solutions. Renewable energy development and deployment, for instance, requires significant financial investment in order to develop technologies and build infrastructure that allows for the seamless transmission of energy.<sup>1</sup> Although such investments are necessary for the long-term energy security of the United States, securing them remains an obstacle to grappling with climate change.<sup>2</sup> Other potential solutions have stalled due to partisan politics. For example, the political deadlock in Congress has all but assured that the United States will not implement a carbon tax to curb CO<sub>2</sub> emissions in the near future.<sup>3</sup>

One option that is both economically feasible and politically plausible, however, is retrofitting existing buildings with energy-efficiency technologies.<sup>4</sup> Retrofitting existing buildings would be economically feasible because several financing mechanisms already

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<sup>1</sup> *Barriers to Renewable Energy Technologies*, UNION OF CONCERNED SCIENTISTS, [http://www.ucsusa.org/clean\\_energy/smart-energy-solutions/increase-renewables/barriers-to-renewable-energy.html](http://www.ucsusa.org/clean_energy/smart-energy-solutions/increase-renewables/barriers-to-renewable-energy.html) (last updated Oct. 27, 2002) (noting that commercialization barriers, price distortions, and market barriers are obstacles to more widespread renewable energy development and deployment), *adapted from* ALAN NOGEE ET AL., UNION OF CONCERNED SCIENTISTS, *POWERFUL SOLUTIONS: 7 WAYS TO SWITCH AMERICA TO RENEWABLE ELECTRICITY* (1999); *FAQs: Renewable Energy*, INT'L ENERGY AGENCY, <http://www.iea.org/aboutus/faqs/renewableenergy/> (last visited Feb. 19, 2014) (noting that economic barriers remain important to renewable energy development).

<sup>2</sup> See *Barriers to Renewable Energy Technologies*, *supra* note 1; *FAQs: Renewable Energy*, *supra* note 1.

<sup>3</sup> Thomas L. Friedman, Op-Ed., *It's Lose-Lose vs. Win-Win-Win-Win-Win*, N.Y. TIMES, Mar. 16, 2013, <http://www.nytimes.com/2013/03/17/opinion/sunday/friedman-its-lose-lose-vs-win-win-win-win-win.html?ref=thomasfriedman>.

<sup>4</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, ALLIANCE TO SAVE ENERGY, RESIDENTIAL & COMMERCIAL BUILDINGS 5 (2013), *available at* [http://www.ase.org/sites/ase.org/files/ee\\_commission\\_building\\_report\\_2-1-13.pdf](http://www.ase.org/sites/ase.org/files/ee_commission_building_report_2-1-13.pdf).

exist through which the costs of the retrofits can be offset by the energy savings attained.<sup>5</sup> In fact, the cost savings would likely exceed the cost of the retrofits, making energy-efficiency retrofits a cost-negative approach.<sup>6</sup> Additionally, retrofitting existing buildings would be politically feasible because retrofitting generally functions as either a private, market-driven transaction, or as a transaction that is regulated at the state and local level,<sup>7</sup> which keeps the issue off the radar of the divisive and partisan Congress.

Not only are energy-efficiency retrofits economically and politically plausible, they are also a practical option with enormous potential to significantly curb greenhouse gas (GHG) emissions and thereby address climate change.<sup>8</sup> Energy-efficiency retrofits in existing buildings could reduce GHG emissions by 710 to 870 megatons by 2030 and achieve positive economic returns on those investments in the process.<sup>9</sup> Moreover, by 2020, the United States could reduce its annual energy consumption by twenty-three percent through cost-efficiency measures.<sup>10</sup> Energy-efficiency retrofits would also promote energy security by reducing American dependence on foreign oil and address energy affordability by helping consumers reduce their energy bills.<sup>11</sup>

There are several challenges to implementing energy-efficiency projects, however, and these challenges vary according to the particular market—residential, governmental, or commercial—that is being targeted. Although there is great potential for energy savings across all three of these markets, this paper will focus on the commercial market, which accounts for “65 percent of the total end-use energy-efficiency potential in the U.S.”<sup>12</sup>

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<sup>5</sup> *Id.* at 14.

<sup>6</sup> *Id.* at 14–16.

<sup>7</sup> *Id.*

<sup>8</sup> James M. Van Nostrand, *Legal Issues in Financing Energy Efficiency: Creative Solutions for Funding the Initial Capital Costs of Investments in Energy Efficiency Measures*, 2 GEO. WASH. J. ENERGY & ENVTL. L. 1, 1 (2011), available at <http://www.gwujeel.files.wordpress.com/2013/07/2-1-nostrand.pdf>.

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> CHARLOTTE KIM ET AL., WILSON SONSINI GOODRICH & ROSATI, *INNOVATIONS AND OPPORTUNITIES IN ENERGY EFFICIENCY FINANCE* 5 (2d ed. 2012), available at <http://www.wsgr.com/publications/PDFSearch/WSGR-EE-Finance-White-Paper.pdf>.

There is approximately 81.1 billion square feet of commercial buildings in the United States, and a majority of this space requires significant amounts of energy for heating, cooling, and lighting.<sup>13</sup> Retrofitting such commercial space could achieve “22 percent average energy savings across the stock of the nation’s existing commercial buildings, which consume 18% of the country’s energy and produce 18% of [U.S.] greenhouse gas emissions.”<sup>14</sup> This would produce results similar to eliminating emissions from thirty-one coal-fired power plants.<sup>15</sup> Retrofitting commercial buildings would also have a tremendous impact on employment and the economy, with the potential to create approximately 360,000 jobs over the next ten years.<sup>16</sup>

Significant challenges exist, however, to achieving energy-efficiency retrofits in the commercial market. For instance, energy-efficiency retrofits typically have high upfront capital costs, which make securing funding for such projects difficult.<sup>17</sup> Moreover, commercial-building owners typically want a quick return on investment because of frequent building turnover, which is not always possible in energy-efficiency projects due to the need to accrue energy savings over time to offset the cost of the project.<sup>18</sup> Additionally, many owners of commercial buildings do not occupy the buildings themselves, which distances them from the full panoply of benefits of retrofitting projects.<sup>19</sup> Commercial-building owners are also profit-driven and thus can often be scared off by the substantial upfront investment necessary to achieve energy savings.<sup>20</sup>

Nevertheless, because of innovative financing mechanisms that are becoming increasingly available, retrofitting existing commercial

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<sup>13</sup> ALLIANCE COMM’N ON NAT’L ENERGY EFFICIENCY POL’Y, *supra* note 4.

<sup>14</sup> PETER WHITE, JOHNSON CONTROLS, INC., AN AWAKENING IN ENERGY EFFICIENCY: FINANCING PRIVATE SECTOR BUILDING RETROFITS 2 (2010), *available at* [http://www.johnsoncontrols.com/content/dam/WWW/jci/be/solutions\\_for\\_your/private\\_sector/Financing\\_PrivateSector\\_whitepaper\\_FINAL.pdf](http://www.johnsoncontrols.com/content/dam/WWW/jci/be/solutions_for_your/private_sector/Financing_PrivateSector_whitepaper_FINAL.pdf).

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at 3.

<sup>18</sup> ANTHONY J. BUONICORE, BUONICORE PARTNERS, LLC, ENERGY EFFICIENCY RETROFIT FINANCING OPTIONS FOR THE COMMERCIAL REAL ESTATE MARKET 2 (2012), *available at* [http://www.srmnetwork.com/wp-content/uploads/Whitepaper\\_EE\\_Financing\\_Options\\_Final\\_02-15-12.pdf](http://www.srmnetwork.com/wp-content/uploads/Whitepaper_EE_Financing_Options_Final_02-15-12.pdf).

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

buildings with energy-efficiency technologies is a viable and promising option to combat climate change. Although various financing mechanisms exist, this paper will focus on three of those mechanisms—Property Assessed Clean Energy financing (PACE), On-Bill Repayment (OBR), and Energy Savings Performance Contracts (ESPC)—and examine the ability of each of those financing mechanisms to promote energy-efficiency retrofits in the commercial building sector.

This Article will argue that PACE and OBR are best-suited for financing energy-efficiency retrofits in the commercial building sector because of their respective abilities to address the unique challenges imposed by that market but that ESPCs can still be valuable in states where the legislature has not passed enabling legislation for PACE and OBR. Moreover, this Article will argue that, in order to capitalize on the potential of PACE and OBR, municipalities must work with one another and with the commercial building sector—sharing information and lessons learned—and continue to receive support and guidance from the federal government.

Part I will set forth the challenges inherent in retrofitting existing commercial buildings with energy-efficiency technologies. Part II will provide a general overview of each of the three financing mechanisms noted above—PACE, OBR, and ESPCs. Part III will examine the ability of each financing method to realistically address the challenges of retrofitting existing commercial buildings with energy-efficiency technologies. Part IV will then conclude by identifying the roles that each financing mechanism could play in the commercial building sector and suggesting how best to promote those financing mechanisms in the commercial market.

## I

### CHALLENGES TO RETROFITTING EXISTING COMMERCIAL BUILDINGS

Although the commercial building sector is ripe for energy savings, several significant obstacles exist that currently hinder widespread adoption of energy-efficiency technologies. This paper will examine four of the most critical obstacles to energy-efficiency retrofits in the

commercial building sector: (1) first-cost issues; (2) timing mismatch; (3) split incentives; and (4) scalability.<sup>21</sup>

#### ***A. First-Cost Issues***

First-cost issues refer to the high upfront financial investment that is often necessary for energy-efficiency retrofits.<sup>22</sup> Although energy savings over the life of the retrofit can generally offset, if not exceed, the upfront financial outlays, this requires patience, sufficient financial reserves to pay for the investment, and an ability to sustain the upfront capital investment until energy savings aggregate over time.<sup>23</sup> It is no wonder then why, in a 2009 survey by Johnson Controls, Inc. and the International Facility Management Association, forty-two percent of approximately 1,400 commercial executives polled cited capital availability as the most significant barrier to energy efficiency projects.<sup>24</sup> The issue of capital availability is exacerbated by the fact that there is little experience to guide estimates of financial risks, expected savings, and financial performance for energy-efficiency projects.<sup>25</sup> Consequently, investors tend to interpret energy-efficiency projects as high risk.<sup>26</sup>

#### ***B. Timing Mismatch***

Timing mismatch refers to situations in which energy-efficiency improvements have a longer payback period than the amount of time a commercial building owner plans to own or occupy the property.<sup>27</sup> This can be an obstacle for commercial-building owners because they do not want to lose any investment made in energy-efficiency retrofits yet cannot guarantee long-term ownership or occupancy.<sup>28</sup> Commercial-building owners must thus determine how to overcome

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<sup>21</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 13; KIM ET AL., *supra* note 12, at 6.

<sup>22</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 13.

<sup>23</sup> See Van Nostrand, *supra* note 8, at 2.

<sup>24</sup> WHITE, *supra* note 14, at 3.

<sup>25</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 14.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* at 13; KIM ET AL., *supra* note 12, at 6.

<sup>28</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 13; KIM ET AL., *supra* note 12, at 6.

this timing mismatch; otherwise, all energy-efficiency retrofits will appear too risky.<sup>29</sup>

### *C. Split Incentives*

Split incentives refers to situations in which both the property owner and his tenant do not have an incentive to invest in energy-efficiency retrofits.<sup>30</sup> This situation typically manifests itself where the property owner is responsible for paying the upfront costs of energy-efficiency retrofits, while the tenant is responsible for paying the property's utility bill.<sup>31</sup> Under such circumstances, the property owner has no incentive to retrofit his property with energy-efficiency technologies because he will not be able to recover the costs of the retrofits through energy savings on utility bills.<sup>32</sup> Moreover, because the tenant is only renting and already receives the benefits, via lower utility bills, of any energy-efficiency retrofits that the property owner installs, the tenant similarly does not have an incentive to independently invest in energy-efficiency technologies because he does not own the property.<sup>33</sup> Thus, neither party ultimately has an incentive to invest in energy-efficiency retrofits.<sup>34</sup>

### *D. Scalability*

Scalability issues refer to situations in which the transaction costs of an individual energy-efficiency project are too high to justify moving forward at that scale.<sup>35</sup> This makes energy-efficiency projects particularly difficult for owners of smaller commercial buildings or for owners who do not have the capital to absorb the transaction costs associated with a smaller scale energy-efficiency retrofit.<sup>36</sup>

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<sup>29</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 13; KIM ET AL., *supra* note 12, at 6.

<sup>30</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 13.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> See *id.*

<sup>35</sup> *Id.*

<sup>36</sup> See *id.*

## II

### ENERGY-EFFICIENCY FINANCING MECHANISMS

Although there are numerous mechanisms for financing energy-efficiency retrofits, this paper will focus on three mechanisms: (1) PACE, (2) OBR, and (3) ESPCs. Both PACE and OBR represent promising options that have achieved recent notoriety for their potential to promote energy-efficiency retrofits in the commercial sector.<sup>37</sup> ESPCs, on the other hand, have had tremendous success in the public sector, but have yet to seriously penetrate the commercial market.<sup>38</sup>

#### A. PACE

PACE is a financing mechanism in which building owners receive funding—either from their local government or from third-party entities—which may be used to finance energy-efficiency retrofits.<sup>39</sup> Where local government is responsible for providing the financing, funding is typically provided by issuing bonds or providing grant funding.<sup>40</sup> In jurisdictions that allow building owners to obtain financing from third-party entities, the local government instead functions as a conduit for private investment, allowing individual property owners to negotiate financing terms with their chosen lenders.<sup>41</sup> In that scenario, the local government still issues a bond to

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<sup>37</sup> See generally WHITE HOUSE, POLICY FRAMEWORK FOR PACE FINANCING PROGRAMS 1 (2009), available at [http://www.whitehouse.gov/assets/documents/PACE\\_Principles.pdf](http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf) (discussing PACE financing programs); Kat Friedrich, *On-Bill Repayment Shows Great Promise, but Significant Challenges Remain*, CLEAN ENERGY FINANCE CENTER (July 9, 2012), <http://www.cleanenergyfinancecenter.org/2012/07/on-bill-repayment-shows-great-promise-but-significant-challenges-remain/> (discussing advantages and challenges of OBRs).

<sup>38</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 14.

<sup>39</sup> *Id.* at 16; Van Nostrand, *supra* note 8, at 2.

<sup>40</sup> BUONICORE, *supra* note 18, at 7; VOTE SOLAR, PACE (PROPERTY ASSESSED CLEAN ENERGY) FINANCING: FREQUENTLY ASKED QUESTIONS 1–2 (2009), available at [http://votesolar.org/wp-content/uploads/2009/12/PACE\\_FAQGeneral3.pdf](http://votesolar.org/wp-content/uploads/2009/12/PACE_FAQGeneral3.pdf); NATHAN WARREN, ECONOMIC OPPORTUNITY STUDIES: A GLOSSARY OF ENERGY EFFICIENCY FINANCING TOOLS 4 (2011), available at <http://www.opportunitystudies.org/repository/File/Glossary.pdf>. The Florida PACE Funding Agency relies on this model. BUONICORE, *supra* note 18, at 7.

<sup>41</sup> BUONICORE, *supra* note 18, at 7. The Los Angeles Commercial Building Performance Partnership program uses this PACE model. *Id.*



fund the energy-efficiency retrofits, but the local government then assigns its collection rights to the third-party entity.<sup>42</sup>

In either model, the upfront funding is secured by a lien on the property,<sup>43</sup> which is senior to privately held liens, such as mortgages, and typically requires consent from the mortgagee to the PACE assessment.<sup>44</sup> The local government or third-party entity then recovers that funding through a property tax assessment on the owner's property tax bill.<sup>45</sup> Typically, the loan is repaid over the lifespan of the energy-efficiency measures, usually a period of five to twenty years.<sup>46</sup>

The property tax assessment reflects the costs of energy-efficiency retrofits and nominal fees necessary to administer the program, and it is generally expected that the total energy savings from the retrofits will either be the same as, or exceed, the total cost of the retrofits.<sup>47</sup> Additionally, because commercial buildings are typically operated under triple-net leases, property owners can pass through the property tax assessments to any tenants that may occupy the property.<sup>48</sup>

Because the local government or third-party entity's investment is repaid through an assessment on the property owner's property tax bill, the repayment obligation is attached to the property and not the property owner.<sup>49</sup> Thus, the repayment obligation transfers automatically to the next property owner in the event of a sale.<sup>50</sup>

PACE is only available, however, where the state government has passed enabling legislation.<sup>51</sup> It is this legislation that will determine

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<sup>42</sup> *Id.*

<sup>43</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 16.

<sup>44</sup> KIM ET AL., *supra* note 12, at 19. Because of the PACE lien's senior status, several commercial PACE financing programs require the mortgage holder's consent before PACE financing is made available to a property owner. BUONICORE, *supra* note 18, at 7; KIM ET AL., *supra* note 12, at 20; *see also* DEREK SUPPLE & OLIVIA NIX, JOHNSON CONTROLS, INC., UNLOCKING THE BUILDING RETROFIT MARKET: COMMERCIAL PACE FINANCING 6-9 (2010), *available at* [http://sallan.org/pdf-docs/Supple\\_Nix\\_Johnson\\_Controls.pdf](http://sallan.org/pdf-docs/Supple_Nix_Johnson_Controls.pdf) (discussing commercial PACE best practices, which includes mortgagee lien consent).

<sup>45</sup> BUONICORE, *supra* note 18, at 7.

<sup>46</sup> SUPPLE & NIX, *supra* note 44, at 4; *see also* Van Nostrand, *supra* note 8, at 2-3.

<sup>47</sup> VOTE SOLAR, *supra* note 40, at 2.

<sup>48</sup> SUPPLE & NIX, *supra* note 44, at 4.

<sup>49</sup> WARREN, *supra* note 40; Van Nostrand, *supra* note 8, at 2-3.

<sup>50</sup> WARREN, *supra* note 40; Van Nostrand, *supra* note 8, at 2.

<sup>51</sup> WHITE, *supra* note 14, at 8.

the parameters of the PACE program, including whether third-party financing is permitted.<sup>52</sup> Once enabling legislation is in place, municipalities within the state may create special PACE districts, which can then issue a PACE master bond.<sup>53</sup> Building owners may then apply for PACE funds to install energy-efficiency retrofits.<sup>54</sup>

PACE programs are slowly, but surely, gaining acceptance across the country. As of February 2013, twenty-six states and the District of Columbia have passed PACE-enabling legislation.<sup>55</sup> This has led to sixteen active commercial PACE programs across seven states in which municipalities are currently accepting applications for energy-efficiency retrofits.<sup>56</sup> The majority of these projects have been active for less than one year.<sup>57</sup>

### **B. OBR**

OBR is a financing mechanism in which third-party entities provide upfront capital for energy-efficiency investments, which are then repaid by the property owners through a surcharge that appears on the owner's monthly utility bill.<sup>58</sup> Just as in the PACE model, the repayment obligation generally spans the useful lives of the energy-efficiency retrofits, and it is expected that the total energy savings resulting from the energy-efficiency retrofits will be equal to, or exceed, the total cost of the retrofits.<sup>59</sup>

A variant of OBR is On-Bill Financing, which operates similarly except that it is a utility company, rather than a third-party entity, that finances the upfront capital for energy-efficiency investments.<sup>60</sup> This article focuses on OBR rather than On-Bill Financing, even though

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<sup>52</sup> *See id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> KATRINA MANAGAN & KRISTINA KLIMOVICH, JOHNSON CONTROLS, SETTING THE PACE: FINANCING COMMERCIAL RETROFITS 6 (2013), available at <http://www.institutebe.com/InstituteBE/media/Library/Resources/Financing%20Clean%20Energy/Setting-the-PACE-Financing-Commercial-Retrofits.pdf>.

<sup>56</sup> *Id.*

<sup>57</sup> *Id.* at 3.

<sup>58</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 15; KIM ET AL., *supra* note 12, at 21.

<sup>59</sup> Van Nostrand, *supra* note 8, at 10.

<sup>60</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 15.

On-Bill Financing is the more prevalent mechanism currently,<sup>61</sup> because relying on third-party entities for financing avoids certain utility-related obstacles. Specifically, utility companies would not have to modify their existing information technology or billing systems to allow for OBR and would not have to develop finance and lending operations as core competencies.<sup>62</sup> This results in lower overhead and administrative costs.<sup>63</sup>

Within the OBR model, there are two funding options: (1) On-Bill Loans and (2) On-Bill Tariffs.<sup>64</sup> On-Bill Loans tie the funds to the particular property owner, meaning that if the owner elects to sell the property, any outstanding amount must be repaid at that time.<sup>65</sup> On-Bill Tariffs, however, are linked to the utility meter.<sup>66</sup> In this way, an On-Bill Tariff program functions like the PACE model in that the repayment obligation is attached to something other than the property owner.<sup>67</sup> This paper will focus on the On-Bill Tariff model because, although this model is more complicated to set up, it allows for longer financing terms and deeper retrofits by allowing a property owner who may not want to be a long-term owner to pass the repayment obligation to the subsequent owner of the property.<sup>68</sup>

Like in PACE, state legislatures must pass enabling legislation for OBR before a municipality can start an OBR program.<sup>69</sup> Although enabling legislation exists for On-Bill Financing in at least twenty states to date, OBR programs are still in their infancy.<sup>70</sup> The

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<sup>61</sup> BRAD COPITHORNE & JAMES FINE, ENVTL. DEF. FUND, ON-BILL REPAYMENT: UNLOCKING THE ENERGY EFFICIENCY PUZZLE IN CALIFORNIA 7 (2011), available at <http://www.edf.org/sites/default/files/On-Bill%20Repayment-Unlocking-the-Energy-Efficiency-Puzzle-in-California.pdf>.

<sup>62</sup> Friedrich, *supra* note 37; see also COPITHORNE & FINE, *supra* note 61, at 7–8.

<sup>63</sup> Friedrich, *supra* note 37; see Factsheet of *On-Bill Repayment Program*, ENVTL. DEF. FUND, <http://www.edf.org/energy/obr> (follow “National OBR factsheet [PDF]” hyperlink) (last visited Feb. 26, 2014).

<sup>64</sup> *On-Bill Repayment Programs*, U.S. DEPARTMENT OF ENERGY, <http://www1.eere.energy.gov/wip/solutioncenter/onbillrepayment.html> (last visited Feb. 26, 2014).

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> See *id.*

<sup>68</sup> See Van Nostrand, *supra* note 8, at 2, 10; *On-Bill Repayment Programs*, *supra* note 64.

<sup>69</sup> See *On-Bill Repayment Programs*, ENVTL. DEF. FUND., <http://www.edf.org/energy/obr> (follow “Proposed California Legislation” or “Enacted New York Statute” hyperlinks at bottom of webpage) (last visited Feb. 21, 2014).

<sup>70</sup> *Id.*

California Public Utilities Commission issued a decision in May 2012 requiring the state's investor-owned utilities to implement OBR for commercial properties, and, in 2013, California introduced commercial and residential OBR pilot programs, which will run through 2015.<sup>71</sup> As of October 2013, California has introduced commercial and residential OBR pilot programs, which will run through 2015. The Environmental Defense Fund is currently working towards establishing OBR programs in Texas, Ohio, and North Carolina as well.<sup>72</sup>

The lone exception is New York, where, in August 2011, Governor Cuomo signed into law legislation allowing for an OBR Program.<sup>73</sup> Under the New York OBR Program, the New York State Energy and Research Development Authority, a state agency, administers the program and provides the upfront capital necessary for the energy-efficiency retrofits.<sup>74</sup> The property owner is billed through the owner's monthly utility bill, with the utility managing the billing and the collection of payments from the property owner.<sup>75</sup> The repayment obligation may be transferred to a new owner in the event of a sale unless the parties to that transaction agree that the loan will be fully repaid prior to the transfer.<sup>76</sup> New York's program is presently limited to residential, small-business, and multi-family properties.<sup>77</sup>

### C. ESPCs

An ESPC is a contracting vehicle that secures financing for energy-efficiency retrofits by bringing together a property owner and an energy service company (ESCO)—which not only arranges financing for the energy-efficiency retrofits (though the customer can also secure financing on his or her own) but also installs and maintains the retrofits.<sup>78</sup> Like PACE financing and OBR, ESPCs are generally

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<sup>71</sup> Kat Friedrich, *States Forge Ahead with On-Bill Repayment for Clean Energy*, CLEAN ENERGY FIN. CENTER. (Oct. 4, 2013), <http://www.cleanenergyfinancecenter.org/2013/10/states-forge-ahead-with-on-bill-repayment-for-clean-energy/>.

<sup>72</sup> *Id.*

<sup>73</sup> *On-Bill Recovery Financing Program Frequently Asked Questions*, N.Y. STATE ENERGY RESEARCH & DEV. AUTHORITY, <http://www.nyseda.ny.gov/Statewide-Initiatives/On-Bill-Recovery-Financing-Program/FAQ.aspx> (last updated July 1, 2013).

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

<sup>77</sup> *Id.*

<sup>78</sup> WARREN, *supra* note 40.

structured such that the total energy savings is equal to, or exceeds, the total costs of the retrofits over the life of the contract, with ESCOs generally guaranteeing a specific amount of energy savings.<sup>79</sup> Unlike PACE financing and OBR, however, ESPCs are contracts negotiated between a property owner and an ESCO<sup>80</sup> and therefore do not require enabling legislation to allow for their use.

There are several types of ESPCs, but the most common types are “shared savings” contracts and “paid from savings” contracts.<sup>81</sup> In shared savings contracts, the dollar value of energy savings is divided between the building owner and the ESCO.<sup>82</sup> If there are no energy savings, the building owner is only obligated to pay the utility bill, with no extra payment being made to the ESCO.<sup>83</sup> In paid from savings contracts, the building owner pays the ESCO a predetermined amount—secured by financial guarantees from the ESCO—each payment period.<sup>84</sup>

The majority of ESPCs can be found in the MUSH (municipalities, universities, schools, and hospitals) market, where facilities are generally owner occupied, owners are committed to operating the facilities for a long time, and property owners have high creditworthiness.<sup>85</sup> In contrast, ESPCs have had little market penetration to date in the private sector, where building turnover is far more common, the profit-motive is stronger, and buildings are less often owner-occupied.<sup>86</sup> ESPCs are slowly gaining traction in the private sector, however, as private organizations seek to finance energy-efficiency retrofits through third-party lenders rather than through internal funds.<sup>87</sup>

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<sup>79</sup> KIM ET AL., *supra* note 12, at 12.

<sup>80</sup> See BUONICORE, *supra* note 18, at 4-5; KIM ET AL., *supra* note 12, at 14.

<sup>81</sup> BUONICORE, *supra* note 18, at 5.

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> See ALLIANCE COMM’N ON NAT’L ENERGY EFFICIENCY POL’Y, *supra* note 4, at 12, 14; BUONICORE, *supra* note 18, at 2, 5.

<sup>86</sup> BUONICORE, *supra* note 18, at 5; WHITE, *supra* note 14, at 4-5.

<sup>87</sup> BUONICORE, *supra* note 18, at 5.

### III ADDRESSING THE CHALLENGES OF RETROFITTING EXISTING COMMERCIAL BUILDINGS

Although PACE, OBR, and ESPCs are all promising options for financing energy-efficiency retrofits because of their ability to provide upfront financing, in order for any of these financing mechanisms to penetrate the commercial building sector, they must be able to address the unique challenges imposed by that market. This part will examine the ability of each of the three financing mechanisms to address the challenges enumerated in Part I of this Article.

#### *A. First-Cost Issues*

To varying extents, PACE, OBR, and ESPCs each have the capacity to conquer the first-cost issue. Each mechanism promises to provide the upfront funding necessary to install energy-efficiency retrofits but in different ways. In PACE, either the government provides funding through the issuance of government bonds or grant funding, or a third-party entity finances the efficiency retrofits.<sup>88</sup> In OBR, a third-party entity provides the upfront funding.<sup>89</sup> In ESPCs, the ESCO typically arranges the upfront financing.<sup>90</sup> The mere provision of funding does not end this inquiry, however, because it is often the terms of the financing that determine whether particular retrofits are feasible. It is here that the three financing mechanisms begin to differ.

With respect to both PACE and OBR, the financing terms are generally favorable because there is a lower risk for investors due to the structure and nature of the two models. In PACE, default rates on property assessments have been historically very low, which translates to increased security for investors' investments.<sup>91</sup> Where there is a default, however, investors benefit from the fact that the property liens used to secure PACE assessments are senior to other

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<sup>88</sup> BUONICORE, *supra* note 18, at 7; WARREN, *supra* note 40.

<sup>89</sup> Van Nostrand, *supra* note 8, at 2.

<sup>90</sup> WARREN, *supra* note 40, at 1.

<sup>91</sup> Derek Supple, Johnson Controls, Overcoming Financial Barriers to Energy Efficiency 13 (2010), available at <http://www.c2es.org/docUploads/Derek%20Supple%20-%20Financial%20Barriers.pdf>.

liens, such as mortgages.<sup>92</sup> This means that, in the event of a default and subsequent foreclosure, the proceeds from the sale of the property will be used to pay PACE investors before others who are entitled to compensation are paid.<sup>93</sup> Similarly, in OBR, default rates are very low because of the threat of utility disconnection and the fact that the repayment obligation is bundled into the monthly utility bill, which makes payment easy and routine.<sup>94</sup> The fact that the repayment obligation is tied to the property in PACE and the utility meter in OBR also makes financing easier because, in the event of a default, a new owner could come in and absorb the repayment obligation.<sup>95</sup> All of this translates into minimal upfront payments (i.e., down payments) and lower interest rates for commercial-property owners using either PACE and OBR, which makes financing energy-efficiency retrofits far more palatable.<sup>96</sup>

The financing terms associated with ESPCs, however, are more complicated than in PACE and OBR. Under ESPCs, the ESCO generally secures financing through liens on the energy-efficiency equipment installed, with the availability and the cost of financing intimately tied to the creditworthiness of the property owner.<sup>97</sup> ESPCs do not provide the low default risk, however, that PACE and OBR provide<sup>98</sup> because ESPC liens are only tied to the installed energy-efficiency equipment;<sup>99</sup> therefore, a property owner's default would not strip him of his building or his electrical power.<sup>100</sup> Moreover, the lack of institutional knowledge and experience using ESPCs in the commercial sector makes it difficult to accurately forecast the energy savings that can be achieved in a particular commercial building.<sup>101</sup> Accordingly, investors face increased risk

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<sup>92</sup> KIM ET AL., *supra* note 12, at 19; Supple, *supra* note 91.

<sup>93</sup> See KIM ET AL., *supra* note 12, at 19.

<sup>94</sup> *Id.* at 22.

<sup>95</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 15–16.

<sup>96</sup> KIM ET AL., *supra* note 12, at 19, 21; WARREN, *supra* note 40, at 3–4.

<sup>97</sup> KIM ET AL., *supra* note 12, at 12–13.

<sup>98</sup> See KIM ET AL., *supra* note 12, at 22 (discussing low default risk of OBR); Supple, *supra* note 91 (discussing low default risk of PACE).

<sup>99</sup> KIM ET AL., *supra* note 12, at 13.

<sup>100</sup> See *id.*

<sup>101</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 14; BUONICORE, *supra* note 18, at 5; WHITE, *supra* note 14, at 4–5.

when dealing with ESPCs, which likely means correspondingly higher interest rates on any financing that is offered.<sup>102</sup>

### ***B. Timing Mismatch***

Both PACE and OBR address the timing mismatch issue by tying the financing repayment obligation to something other than the particular property owner.<sup>103</sup> In PACE, the repayment obligation is tied to the property that is being retrofitted.<sup>104</sup> If that property is subsequently sold, the repayment obligation is transferred, along with the property, to the new owner.<sup>105</sup> OBR accomplishes the same objective so long as the On-Bill Tariff model, which ties the repayment obligation to the utility meter, is used rather than the On-Bill Loan model, which ties the repayment obligation to the particular property owner.<sup>106</sup> Because the repayment obligation runs with the utility meter, the repayment obligation is transferred, along with the property, to the new owner after sale.<sup>107</sup> Thus, in both PACE and OBR, a property owner can take advantage of energy-efficiency retrofits without worrying about the risk of being saddled with a repayment obligation after he sells the property.<sup>108</sup>

In contrast, the ESPC model does not have a direct response to the timing mismatch issue. Because ESPCs are contractual arrangements between two private parties,<sup>109</sup> the arrangement cannot simply be transferred to new property owners in the event of a sale. This means that property owners generally must have long-term plans to maintain ownership of their buildings in order to ensure that the energy savings they receive from efficiency retrofits equal, or exceed, the total cost of those retrofits.<sup>110</sup> Building turnover is often frequent in the

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<sup>102</sup> See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 14; KIM ET AL., *supra* note 12, at 13.

<sup>103</sup> WARREN, *supra* note 40, at 3–4; Van Nostrand, *supra* note 8, at 2–3.

<sup>104</sup> WARREN, *supra* note 40; Van Nostrand, *supra* note 8, at 2–3.

<sup>105</sup> See WARREN, *supra* note 40; Van Nostrand, *supra* note 8, at 2–3.

<sup>106</sup> *On-Bill Financing for Energy Efficiency Improvements*, AM. COUNCIL FOR AN ENERGY-EFFICIENCY ECON., <http://aceee.org/sector/state-policy/toolkit/on-bill-financing> (last visited Feb. 26, 2014); *On-Bill Repayment Programs*, *supra* note 64.

<sup>107</sup> See *On-Bill Financing for Energy Efficiency Improvements*, *supra* note 106; *On-Bill Repayment Programs*, *supra* note 64.

<sup>108</sup> See WARREN, *supra* note 40, at 3–4; Van Nostrand, *supra* note 8, at 2–3.

<sup>109</sup> WARREN, *supra* note 40, at 1–2.

<sup>110</sup> BUONICORE, *supra* note 18, at 5.



commercial building sector,<sup>111</sup> however, which makes ESPCs less than ideal for the market segment.

### *C. Split Incentives*

Both PACE and OBR can effectively address the split incentives issue in the commercial building sector, but ESPCs again fall short. PACE is able to address the split incentives issue primarily because most commercial-building owners use triple-net leases when transacting with tenants<sup>112</sup> and because the PACE assessment is made on the owner's property tax bill.<sup>113</sup> A triple-net lease requires the tenant to pay all taxes, insurance, maintenance, and utility expenses in addition to the agreed upon monthly rent.<sup>114</sup> Because tax assessments, such as the PACE property tax assessment, qualify as pass-through expenses under most triple-net leases, there is no cost disincentive motivating property owners to avoid energy-efficiency retrofits.<sup>115</sup> Instead, property owners can arrange for the upfront financing of energy-efficiency retrofits and pass through the costs to the tenants.<sup>116</sup>

OBR is able to address the split incentives issue so long as it is structured as an On-Bill Tariff rather than an On-Bill Loan.<sup>117</sup> This is primarily because, unlike with property taxes, individual renters/tenants generally pay their own utility bills.<sup>118</sup> Thus, so long as the repayment obligation runs with the meter, as it does in the On-Bill Tariff version of OBR,<sup>119</sup> the fact that the repayment obligation can transfer from renter to renter ensures that the property owner is not saddled with the costs of energy-efficiency retrofits that the owner does not personally benefit from.<sup>120</sup>

ESPCs, however, are not able to address the split incentives issue for reasons similar to why they cannot address the timing mismatch

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<sup>111</sup> *Id.*

<sup>112</sup> *Id.* at 2.

<sup>113</sup> Supple, *supra* note 91, at 12.

<sup>114</sup> WHITE, *supra* note 14, at 9.

<sup>115</sup> See Supple, *supra* note 91.

<sup>116</sup> *Id.*

<sup>117</sup> See *On-Bill Financing for Energy Efficiency Improvements*, *supra* note 106; *On-Bill Repayment Programs*, *supra* note 64.

<sup>118</sup> See KIM ET AL., *supra* note 12, at 11.

<sup>119</sup> *On-Bill Repayment Programs*, *supra* note 64.

<sup>120</sup> See *On-Bill Financing for Energy Efficiency Improvements*, *supra* note 106; *On-Bill Repayment Programs*, *supra* note 64.

issue—namely, ESPCs, and their corresponding repayment obligations, cannot be easily transferred from existing property owners to new owners. Thus, whereas PACE assessments can be passed through to tenants<sup>121</sup> and the OBR repayment obligation can be transferred from tenant to tenant,<sup>122</sup> in the ESPC context, there is no obvious mechanism for the property owner to transfer the costs of energy-efficiency retrofits to another party. This is why ESPCs have traditionally been limited to the MUSH market segment; in the MUSH market, the property owners typically occupy their own facilities and are committed to operating those facilities for long periods of time such that investments in energy-efficiency retrofits are worthwhile.<sup>123</sup>

#### *D. Scalability*

With regard to scalability, each of the financing mechanisms discussed in this article has significant roadblocks to achieving economies of scale. For PACE, the requirement that mortgagees consent to the seniority of a PACE lien before PACE applications can be approved is a major obstacle to scaling up PACE projects.<sup>124</sup> Additionally, property owners are not permitted to use PACE financing to procure portable items, such as light bulbs and refrigerators.<sup>125</sup> There are also legal and administrative hurdles and costs that municipalities must account for before they can start a PACE program, which generally takes from six to twelve months.<sup>126</sup>

Compared to PACE, OBR has better prospects of achieving economies of scale. Although there are many barriers to achieving scale associated with On-Bill Financing, most of those barriers do not exist for OBR.<sup>127</sup> This is because OBR depends on third-party entities to finance the energy-efficiency retrofits whereas On-Bill Financing

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<sup>121</sup> Supple, *supra* note 91.

<sup>122</sup> See *On-Bill Financing for Energy Efficiency Improvements*, *supra* note 106; *On-Bill Repayment Programs*, *supra* note 64.

<sup>123</sup> BUONICORE, *supra* note 18, at 5; KIM ET AL., *supra* note 12, at 7.

<sup>124</sup> GREG KATS ET AL., CAPITAL E FOR ENERGY FOUND., ENERGY EFFICIENCY FINANCING—MODELS AND STRATEGIES 25 (updated 2011), available at <http://www.cleanenergyfinancecenter.org/wp-content/uploads/EE-Financing-Models-and-Strategies-Oct-2011.pdf>.

<sup>125</sup> *Id.*

<sup>126</sup> *Id.*

<sup>127</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 15; see KATS ET AL., *supra* note 124, at 22–23.

depends on utilities to take on that task.<sup>128</sup> Utilities, however, are reluctant to take on the responsibilities typically associated with lenders.<sup>129</sup> Not only would utilities have to modify their billing and information technology systems, which can be expensive, but they would also have to serve the dual roles of loan originator and collector and have to monitor energy-efficiency equipment to stay ahead of customer complaints.<sup>130</sup> Nevertheless, one significant barrier does exist for OBR and that barrier pertains to the On-Bill Tariff version of OBR.<sup>131</sup> As discussed in this article, the On-Bill Tariff version is essential to a successful OBR program because it allows renters/owners to transfer repayment obligations to successors, thereby tackling the split incentive and timing mismatch issues.<sup>132</sup> On-Bill Tariff systems, however, are far more complicated to set up than their counterpart, the On-Bill Loan system, which makes it more difficult to secure the enabling legislation necessary to have OBR programs at all.<sup>133</sup>

The scalability issues pertaining to ESPCs, on the other hand, derive from the contractual nature of the financing mechanism. ESPCs require substantial negotiation and documentation before energy-efficiency measures can begin, which raises administrative costs and can generally be very time consuming.<sup>134</sup> There are also significant transaction costs related to assessing and validating energy savings.<sup>135</sup> Moreover, the costs related to negotiations, documentation, and assessing and validating energy savings all combine to generally limit ESPCs to large-scale projects because ESCOs do not see sufficient profits in small-scale projects when taking into account the corresponding administrative and transactional costs.<sup>136</sup> Finally, because financing under ESPCs is intimately tied to the creditworthiness of the property owner, projects must generally be

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<sup>128</sup> ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y, *supra* note 4, at 15.

<sup>129</sup> KATS ET AL., *supra* note 124, at 23.

<sup>130</sup> *Id.*

<sup>131</sup> *Id.*

<sup>132</sup> *See supra* Parts III(B)–(C).

<sup>133</sup> KATS ET AL., *supra* note 124, at 23.

<sup>134</sup> *Id.* at 7.

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*

approved on a case-by-case basis, taking full account of each property owner's ability to repay the loan.<sup>137</sup>

#### IV

### WEIGHING THE OPTIONS: THE FUTURE OF ENERGY-EFFICIENCY RETROFITS

Understanding the challenges to retrofitting existing commercial buildings is a critical first step to achieving greater energy efficiency in the future. The three financing mechanisms discussed in this paper have proven, to varying degrees, an ability to tackle at least some of these challenges.

#### A. PACE, OBR & ESPCs: Carving Out Roles

Of the three financing mechanisms discussed in this Article, PACE and OBR are best equipped to tackle energy efficiency in the commercial sector because of their ability to address each of the challenges enumerated in Part I of this Article. ESPCs, on the other hand, emerged as the financing mechanism least suited for the commercial building sector because the mechanism is ideally designed for situations in which a building owner intends to occupy the building for a sustained period of time and plans to install significant energy-efficiency measures such that the transaction costs associated with ESPCs are not prohibitive.<sup>138</sup> Nevertheless, each of these mechanisms has a role to play in the future of energy-efficiency retrofits in the commercial building sector.

Both PACE and OBR are promising financing mechanisms for the commercial building sector. OBR, in particular, is well-suited for the commercial market because of its potential to achieve economies of scale<sup>139</sup> and its ability to avoid some of the pitfalls inherent in PACE—namely, conflicts with mortgage holders regarding the seniority of PACE liens.<sup>140</sup> However, OBR's novelty and limited

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<sup>137</sup> *Id.*

<sup>138</sup> *See supra* Part III.

<sup>139</sup> *See KATS ET AL.*, *supra* note 124, at 23.

<sup>140</sup> Because the repayment obligation in OBR is linked to the utility meter, there is no lien on the property (as there is in PACE models) and thus no conflict with the mortgage holder. *See ALLIANCE COMM'N ON NAT'L ENERGY EFFICIENCY POL'Y*, *supra* note 4, at 15; *KIM ET AL.*, *supra* note 12, at 21–22.

market penetration to date is a significant challenge.<sup>141</sup> Although commercial PACE programs are also relatively new, there are at least more of such programs than there are commercial OBR programs, which means there is more experience and institutional knowledge with PACE.<sup>142</sup>

Despite the comparative disadvantages of ESPCs with respect to PACE and OBR, there is still a significant role for ESPCs to play in the future of energy efficiency in the commercial building sector. Both PACE and OBR require that state legislatures pass enabling legislation that allows for municipalities to start energy-efficiency programs.<sup>143</sup> Where such enabling legislation does not exist, OBR and PACE are not available.<sup>144</sup> Under such circumstances, ESPCs can prove to be extremely valuable because, as contracts between private parties,<sup>145</sup> they do not require enabling legislation. ESPCs can thus help fill the void created by state legislatures that have not passed enabling legislation for PACE or OBR.

### ***B. Recommendations for the Future***

Understanding the available options for energy-efficiency retrofits is important, but ensuring that those options are appropriately considered and implemented may be even more critical. This section will propose recommendations for improving the prospects of PACE and OBR in the commercial building sector.

#### ***1. Municipalities Must Promote Greater Information Sharing***

Because both PACE and OBR could effectively meet the energy-efficiency challenges imposed by the commercial building sector, states that have not yet passed enabling legislation should work towards doing so. Such efforts, however, require a powerful impetus to get things started. On this front, it is important to improve the level of discourse surrounding energy-efficiency retrofits—both on an environmental level and on an economic level—because many barriers to energy-efficiency improvements arise from a general lack

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<sup>141</sup> BUONICORE, *supra* note 18, at 7–8.

<sup>142</sup> *See id.* at 7; MANAGAN & KLIMOVICH, *supra* note 55.

<sup>143</sup> BUONICORE, *supra* note 18, at 7; WHITE, *supra* note 14, at 8.

<sup>144</sup> BUONICORE, *supra* note 18, at 7; WHITE, *supra* note 14, at 8.

<sup>145</sup> WARREN, *supra* note 40, at 1.

of information about the virtues of energy-efficiency retrofits.<sup>146</sup> Ultimately, commercial-building owners must be made to better understand the benefits of energy-efficiency retrofits with respect to both their bottom line and the benefits to the community at large.<sup>147</sup>

To accomplish this end, municipalities must not only be vigilant with regard to data collection and organization for existing PACE and OBR programs, but they must also actively encourage the dissemination of this information to the commercial building sector.<sup>148</sup> Helpful information would include information regarding the dollar value of assessments and energy savings as a function of the size of the retrofit, the length of payback periods, and the lifespan of installed retrofits. This information would help commercial-building owners understand the energy savings and emissions reductions that are attainable through energy-efficiency retrofits and likely encourage them to undertake such efforts.<sup>149</sup> The information would be especially helpful if it could be organized in such a way that commercial-building owners could obtain energy-efficiency information for buildings possessing certain characteristics (i.e., construction date of the building, size of the building, etc.). In this way, commercial-building owners could seek out information on buildings analogous to their own such that they can have at least a rough idea of what the costs of retrofitting their own building would be.

Educating the commercial building sector about the benefits of PACE and OBR would also likely have the added effect of putting pressure on state legislators to pass enabling legislation. If commercial-building owners hear of the benefits that building owners in other states are receiving by retrofitting their buildings with energy-efficiency technologies, they are more likely to lobby for the right to receive similar benefits in their state.

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<sup>146</sup> KAREN PALMER ET AL., RESOURCES FOR THE FUTURE, BORROWING TO SAVE ENERGY: AN ASSESSMENT OF ENERGY-EFFICIENCY FINANCING PROGRAMS 3 (2012), available at <http://www.rff.org/RFF/Documents/RFF-Rpt-Palmeretal%20EEFinancing.pdf>.

<sup>147</sup> See MARK BROWN, FRANKLIN ENERGY SERVICES, LLC, FINANCING ENERGY IMPROVEMENTS 12 (2011), available at [http://www.franklinenergy.com/sft341/whitepaper\\_financingenergyimprovements\\_012011.pdf](http://www.franklinenergy.com/sft341/whitepaper_financingenergyimprovements_012011.pdf).

<sup>148</sup> See *id.*

<sup>149</sup> See *id.*

## 2. Municipalities Must Develop and Refine Best Practices

Developing and refining best practices for PACE and OBR depends on both the data collection and information sharing discussed above and on continued research and development focused on improving both financing mechanisms. Greater data collection and information sharing would promote the continued development and refinement of best practices because states and municipalities could greatly benefit from learning from the experiences of other states and municipalities regarding which program features work and which do not. Information sharing of this sort is especially important for OBR because this financing mechanism is very new and there is little experience to build upon.<sup>150</sup>

Determining best practices for PACE and OBR also requires that states across the country launch more pilot programs so that more data can be collected. As of February 2013, there were only sixteen commercial PACE programs.<sup>151</sup> The prevalence of OBR programs is barely higher.<sup>152</sup> Only New York has passed enabling legislation for OBR to date, and that legislation limits the program to residential, small-business, and multi-family properties.<sup>153</sup> This scarcity of PACE and OBR programs in the commercial sector makes it difficult to collect sufficient data to identify best practices. Accordingly, in at least the states that have passed the requisite PACE- or OBR-enabling legislation, more municipalities must start programs.

## 3. The Federal Government Must Continue to Lead

The federal government has played a significant role to date in improving energy efficiency in the commercial building sector. In February 2011, President Obama created the “Better Buildings” initiative aimed at improving energy efficiency in commercial and industrial buildings by twenty percent by 2020 and encouraging greater private sector investment in energy efficiency.<sup>154</sup> The federal government has also offered tax incentives for commercial-building

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<sup>150</sup> BUONICORE, *supra* note 18, at 7.

<sup>151</sup> MANAGAN & KLIMOVICH, *supra* note 55.

<sup>152</sup> BUONICORE, *supra* note 18, at 7 (stating that there are thirty-one relatively new on-bill financing programs).

<sup>153</sup> See *On-Bill Recovery Financing Program Frequently Asked Questions*, *supra* note 73.

<sup>154</sup> ALLIANCE COMM’N ON NAT’L ENERGY EFFICIENCY POL’Y, *supra* note 4, at 32.

owners who install energy-efficiency technologies and funded pilot energy-efficiency programs through the American Recovery and Reinvestment Act of 2009 (ARRA).<sup>155</sup>

Some of these federal measures, however, are eroding. Funding provided through ARRA has been shrinking and tax incentives have been allowed to expire.<sup>156</sup> ARRA funding, in particular, has been critical to energy-efficiency retrofits because it can play multiple credit-enhancing roles.<sup>157</sup> ARRA funding cannot only be used to fund reserve funds, which could be used to pay back lenders where there is a default on repayment, but it can also be used to buy down interest rates and subsidize transaction costs.<sup>158</sup> ARRA funding is thus critical to the continued development of energy-efficiency pilot programs, which in turn makes it critical to securing greater participation from the private lending sector in the energy-efficiency market.<sup>159</sup> With this in mind, the federal government should work towards increasing ARRA funding in order to further promote energy-efficiency pilot programs.

### CONCLUSION

Improving energy efficiency in the commercial building sector has the potential to significantly reduce the impacts of climate change by reducing overall greenhouse gas emissions. PACE, OBR, and, to a lesser extent, ESPCs can help finance these efficiency projects by providing the upfront funding necessary to install energy-efficiency technologies. PACE and OBR, in particular, present promising options for financing energy-efficiency retrofits because of their respective abilities to address the timing mismatch, split incentive, and scalability issues.

In order to capitalize on the promise of PACE and OBR, however, municipalities must do more to work with other municipalities—both within and outside of the state—and the commercial building sector.

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<sup>155</sup> *Id.* at 32–33.

<sup>156</sup> *Id.*

<sup>157</sup> KIM ET AL., *supra* note 12, at 22; *Choose Credit Enhancement for Property-Assessed Clean Energy Financing and Apply Recovery Act Funds*, U.S. DEPARTMENT OF ENERGY, [http://www4.eere.energy.gov/wip/solutioncenter/finance\\_guide/content/choose\\_credit\\_enhancement\\_property\\_assessed\\_clean\\_energy\\_financing\\_and\\_apply\\_recovery\\_act](http://www4.eere.energy.gov/wip/solutioncenter/finance_guide/content/choose_credit_enhancement_property_assessed_clean_energy_financing_and_apply_recovery_act) (last visited Feb. 26, 2014) [hereinafter *Choose Credit Enhancement*].

<sup>158</sup> KIM ET AL., *supra* note 12, at 22; *Choose Credit Enhancement*, *supra* note 157.

<sup>159</sup> KIM ET AL., *supra* note 12, at 22; *Choose Credit Enhancement*, *supra* note 157.



Because there is little experience currently with respect to PACE and OBR in the commercial building sector, information sharing is critical to encouraging commercial building owner participation in efficiency programs and developing best practices. Moreover, the federal government must continue to support pilot energy-efficiency programs because such programs contribute valuable data that can be used to improve efficiency programs and draw in investors.

As best practices are developed and refined over time, both PACE and OBR can make inroads towards standardization, which would help simplify PACE and OBR implementation processes and thereby help lower the administrative and transaction costs associated with these programs. With the development of greater experience and institutional knowledge, perhaps legal organizations—such as the American Bar Association, which is responsible for the creation of the Model Rules of Professional Conduct, or the American Law Institute, which is responsible for the creation of the Model Penal Code—could then assist states by drafting model PACE and model OBR enabling legislation that could serve as templates for states considering those programs. Ultimately, with coordinated teamwork and strong information gathering and dissemination, there is no reason to think that the commercial building sector cannot live up to its energy savings potential.

