

A CLEAN ENERGY DEPLOYMENT ADMINISTRATION: THE RIGHT POLICY FOR EMERGING RENEWABLE TECHNOLOGIES

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Synopsis: A Clean Energy Deployment Administration (CEDA) or “green bank” has the potential to direct responsible government incentives towards a group of critical clean energy technologies that currently lack much-needed government support – “emerging” technologies that are proven at the demonstration level, but due to a lack of access to financing and proven track record have yet to be deployed at a commercial scale in the U.S. This type of government support is essential in the path towards creating renewable technologies that can compete in the market with conventional power generation and contribute to a material reduction in future carbon emissions. This article explains why emerging technologies are the right target for CEDA support and provides principles that should inform the passage and implementation of a CEDA program. These principles include the need to ensure CEDA supports low-carbon technologies and that the program operates within the confines of reasonable taxpayer and risk management protections. The authors look to the Department of Energy Title XVII Loan Guarantee Program experience to enlighten these principles. This article should be useful for those engaged in energy finance, in both the public policy and private legal and investment sectors.

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I. INTRODUCTION

The existential threat of climate change has made the transition to a low carbon economy a national and global imperative. This imperative requires a complete transformation in American energy policy, which, since about the time of the Industrial Revolution, has prioritized the availability of affordable fossil fuel-derived power as a driver of American economic growth. The Intergovernmental Panel on Climate Change (IPCC) has analyzed an “ambitious but achievable” set of policies to cause a 50-85% reduction in international greenhouse gas (GHG) emissions by 2050 (as compared with 2000 levels), the reduction level likely required to avoid some of the most severe and permanent potential impacts of global warming.¹ In light of the Department of Energy’s domestic reference case predictions of a 9% increase in energy-related carbon dioxide emissions above 2008 levels by 2035 and insufficient increases in renewable energy generation and efficiency over the same period, the United States cannot currently ensure our country achieves its proportionate share of the global emissions reduction target to avoid crossing an irreversible threshold of global atmospheric carbon concentration.² Government intervention to support the deployment of renewable energy is imperative in our attempts to stave off disastrous climate change, and this intervention must also begin to create a level playing field for renewable energy sources. Congress has heavily subsidized the extraction, processing, and infrastructure that support the production of fossil fuel electricity so that coal, oil, and natural gas remain available at a relatively low cost. Such energy sources account for over 85% of energy consumed in the

1. UNION OF CONCERNED SCIENTISTS, CITIZENS AND SCIENTISTS FOR ENVTL. SOLUTIONS, *Findings of the Fourth IPCC Fourth Assessment Report: Climate Change Mitigation*, http://www.ucsusa.org/global_warming/science_and_impacts/science/findings-of-the-ipcc-fourth-1.html#4 (last visited Oct. 25, 2010) (citing GUPTA, S. ET AL., 2007: *Policies, Instruments and Co-operative Arrangements*, in CLIMATE CHANGE 2007: MITIGATION OF CLIMATE CHANGE. CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 745 (B. Metz et al. eds., 2007)).

2. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2010 (2010), <http://www.eia.doe.gov/oiaf/aeo/emission.html> and http://www.eia.doe.gov/oiaf/aeo/pdf/trend_3.pdf.

U.S.³ In recognition of this support and its impacts, President Obama has proposed “eliminating [twelve] tax breaks for oil, gas, and coal companies; closing loopholes that would raise nearly \$39 billion over the next decade.”⁴ The fossil fuel industry further benefits from the fact that the costs of carbon emission continue to be externalized in the absence of a carbon price. Renewable energy and efficiency technologies, by contrast, have not benefited from a similar long-standing, multi-layered subsidy system that has leveraged decades of massive private conventional generation investment. Therefore, the renewable power sector has had difficulty competing, cost-wise, with fossil fuel generating capacity.

Given the gravity of the threat posed by climate change and the aforementioned subsidies, the current low-carbon demand drivers will not be enough on their own to deploy the magnitude of efficiency and renewable energy resources required to achieve the emissions savings the IPCC has deemed critical. The U.S. must accelerate deployment of renewable energy technologies through the continuation of incentives that make mature renewable technologies economically viable, and new policies that develop adoption of renewable energy technologies with the potential to compete with fossil fuels.

The government, energy industry, economists, environmentalists, and other key interest groups are forging a fragile consensus that the threat of climate change necessitates these policy changes. However, as evidenced by the negotiations in the Senate over the last year regarding the merits of a climate and energy bill, these groups are, thus far, unable to achieve consensus on which policies will prove most effective in promoting renewable energy deployment and, as a result, decreased carbon emissions. Policy instruments should correctly incentivize investors to increase the supply of commercial renewable energy in the near term, and to develop and deploy new renewable energy technologies over time. In addition to carbon reduction, well-designed renewable energy and efficiency policy instruments provide the additional benefits of significant job creation, sustainable manufacturing industry growth, and energy independence (consideration of these benefits is outside the scope of this paper).

Outside of a potential cap or price on carbon and a federal renewable energy standard, one policy instrument currently under consideration in several legislative proposals is a Clean Energy Deployment Administration (CEDA) or “green bank” that would provide credit support and credit enhancement to energy projects.⁵ Through a CEDA, the government would provide financial support for energy projects in an attempt to increase the flow of private capital into the sector. If designed correctly, a CEDA has the unique potential among policy tools already in place or under consideration to fill a gap necessary for the commercial deployment of cost-competitive renewable energy technologies.

3. DEP’T. OF ENERGY, Fossil Fuels, <http://www.energy.gov/energysources/fossilfuels.htm>. See also IEA, OPEC, OECD & WORLD BANK, ANALYSIS OF THE SCOPE OF ENERGY SUBSIDIES AND SUGGESTIONS FOR THE G-20 INITIATIVE (2010), available at http://www.iea.org/weo/docs/G20_Subsidy_Joint_Report.pdf.

4. OFFICE OF MGMT. & BUDGET, BUDGET OF THE U.S. FEDERAL GOVERNMENT FISCAL YEAR 2011 at 4 (2010), available at <http://www.gpoaccess.gov/usbudget/fy11/pdf/budget.pdf>.

5. The proposed policies would also provide credit support and credit enhancement designed to accelerate development of robust energy efficiency markets, as well as renewable energy-related manufacturing facilities. Although the authors are supportive of including incentives in this area, this article will not directly consider CEDA’s implementation with regards to this type of possible support.

Closing this gap is an essential part of the effort to significantly reduce U.S. carbon emissions.

This article first describes CEDA proposals under consideration in Congress. It then sets out key principles and structural issues that need to be addressed so that CEDA can effectively support renewable energy technology deployment in a manner that has significant potential for carbon reductions. The key principles: first, CEDA should only provide financial support to low-carbon technologies. Second, CEDA's support should focus on "emerging" technologies as opposed to research and development phases or fully commercial technologies. Third, CEDA should not require an exemption from the Congressional oversight protections provided by the Federal Credit Reform Act of 1990 (FCRA)⁶ in order to be effective and efficient. Throughout, this article indicates where the current CEDA proposals are consistent with the principles and where they should be changed or enhanced.

II. CEDA-CURRENT PROPOSALS

Prior to considering principles that will make a CEDA most effective as a means to drive down domestic carbon emissions, it is important to have a basic understanding of the current CEDA legislative proposals. Three different versions of a CEDA or "green bank" program have come under consideration by Congress over the last year. The proposals are similar in the types of financial support mechanisms that CEDA would utilize, but each support different types of renewable energy technologies. The Senate Committee on Energy and Natural Resources, the originators of CEDA legislation and supporters (like the authors) of a focus on emerging renewable energy technologies, as opposed to those already deployed commercially in the U.S., passed the Senate version of CEDA out of committee with bipartisan support as part of the American Clean Energy Leadership Act (ACELA).⁷ In June 2009, the House of Representatives passed CEDA legislation that more evenly balances its recommendations between emerging and commercial technologies as part of the American Clean Energy and Security Act (ACES or Waxman-Markey).⁸ Prior to the passage of Waxman-Markey, Congressman Van Hollen introduced the Green Bank Act of 2009.⁹ His proposal focused on support for the deployment of already mature clean technologies, and it was referred to the House Energy and Commerce Committee in March of 2009.¹⁰ The Green Bank Act stalled after the separate CEDA legislation, which was more comparable to the Senate proposal, got attached to Waxman-Markey, and will not be considered here.¹¹

CEDA proposals in Waxman-Markey and ACELA each create a new financing entity that would, through the provision of loans, loan guarantees, and

6. Federal Credit Reform Act, 2 U.S.C. § 661 (2006).

7. American Clean Energy Leadership Act of 2009, S. 1462, 111th Cong. (2009) (Tit. I.A., passed out of Committee 15-8, July 16, 2009. As of Oct. 7, 2010, this bill has yet to be considered on the Senate floor).

8. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009) (passed the House, June 26, 2009, and was placed on Senate Legislative Calendar July 7, 2009).

9. H.R. 1698, 111th Cong. (2009).

10. *Id.* § 2, sec. 9801(b)-(c).

11. Congressman Van Hollen's green bank proposal is not likely to move out of Committee in the short term since ACES included a different CEDA provision.

other financial products,¹² “promote access to affordable financing for accelerated and widespread deployment” of clean energy, energy infrastructure, energy efficiency, and related manufacturing technologies.¹³ These proposals share many similarities, including the recognition of a need to reduce carbon emissions. The distinctions in their structures, funding sources, technology priorities, and risk management and transparency requirements, however, indicate key differences in policy priorities.

A. *Structure*

ACES establishes CEDA as an independent corporation supported by the full faith and credit of the United States government. CEDA would be led by a Presidentially-appointed Administrator, who would serve as the corporation’s Chief Executive Officer and Chairman of the Board. The Administrator would be assisted by a nine-member Board of Directors made up of the Secretaries of Energy, Treasury, Interior, and Agriculture, and four Presidentially-appointed and Senate-confirmed private-sector individuals with relevant expertise. Regular operations would be informed by an eight-member Energy Technology Advisory Council (ETAC), with responsibilities including the development and implementation of a technology assessment methodology.¹⁴ The corporation would be free to hire staff without regard to federal pay scale requirements, from which government corporations are exempt.¹⁵

Unlike ACES, ACELA would house CEDA within DOE as a new administration.¹⁶ ACELA also contemplates a Presidentially-appointed CEDA Administrator, but in this case the Administrator would report to the Secretary of Energy.¹⁷ The bill establishes a Board of Directors, also like ACES, but with a different composition of members, including the Secretary of Energy, the Administrator, and seven Presidentially-appointed private sector individuals.¹⁸ ACELA also establishes an ETAC, which would be composed of eight members – five chosen by the Secretary and three by the Board of Directors.¹⁹ CEDA’s hiring would be subject to federal general scale salary requirements, with an exception of twenty critical pay staff positions that could be compensated at market rates.²⁰ Finally, ACELA merges the functions and authority under the existing Title XVII Program into CEDA.²¹

12. Compare H.R. 1698 § 2, sec. 9801 (where the bill notes some of the financial products the Green Bank may utilize); S. 1462 §§ 105(a), 106 (a)(1)(A); H.R. 2454 (where forms of financial assistance are noted within each section discussing a particular clean energy or efficiency strategy).

13. H.R. 2454 § 182; S. 1462 §101.

14. H.R. 2454 § 186(a).

15. 5 U.S.C. § 5102(a)(F)(i) (2008).

16. S. 2462 § 105(a).

17. *Id.* § 105(b)(1)(A).

18. *Id.* § 105(c).

19. *Id.* § 105(d).

20. S. 1462 § 105(e)(3).

21. *Id.*

B. *Funding and Limitations*

Both bills provide funding for CEDA's implementation and operation. The House bill does this by issuing treasury bonds in the amount of \$7.5 billion, making the U.S. the owner of 100% of the corporation's stock.²² ACELA provides appropriations in the amount of \$10 billion, to be transferred into CEDA within eighteen months of enactment, along with administrative appropriations to be available when the bill passes into law.²³ Both versions contemplate CEDA's finances as being handled through a revolving fund that allows for the use of revenues without further government appropriation, and both call for CEDA to become a self-sustaining²⁴ revolving fund with intended revenues from fees and other services to limit CEDA's need for additional government funding over time.²⁵ Both versions also call for the establishment of appropriate loan loss reserves, and neither bill includes an overall cap on the total amount of loan volume that may receive CEDA support.²⁶

C. *Priority Technologies*

Both the House and Senate versions of CEDA intend to support the development and deployment of Clean Energy Technologies, which each proposal defines differently. ACES defines Clean Energy Technologies as those that (1) reduce, avoid, or sequester greenhouse gas concentrations; and (2) either (a) reduce the need for additional energy supplies through increased efficiency, or (b) provide diversification of the U.S. energy industry in a manner that will strengthen energy security.²⁷ By contrast, the Clean Energy Technologies definition in ACELA only requires that one of these three criteria be met, and this fails to make a low-carbon profile a prerequisite to support.²⁸

Within the universe of Clean Energy Technologies, both the Senate and House versions dictate that CEDA should "provide the maximum practicable percentage of support to promote breakthrough technologies."²⁹ Breakthrough Technologies are then defined in both ACES and ACELA as those that "ha[ve]

22. H.R. 2454 § 184(e)(1).

23. S. 1462 § 107(a)-(6)(A).

24. S. 1462 §§ 101, 105(b)(2)(C)(i); H.R. 2454 § 182.

25. The cost of any credit support, often referred to as the "subsidy cost," is the net present value of the likely cost of a credit support recipient's default, minus the likelihood that the government would recover any funds from the recipient over the term of the support. Each time credit support is provided, CEDA must set aside funds equal to the subsidy cost to cover predicted liabilities should a default occur. Subsidy costs are described in detail in section III.C, below.

26. S. 1462 § 106(a)(1)(C); H.R. 2454 § 187(c).

27. H.R. 2454 § 183(4).

28. *Id.* § 102(A)-(C).

29. S. 1462 § 106(a)(1)(C)(iii); H.R. 2454 § 187(c)(3)(C). Other signs of the prioritization of breakthrough technologies exist in the bills. Each bill instructs the Energy Technology Advisory Council, the entity charged with developing a technology assessment methodology and advising on the technological approaches that CEDA should support, to consider "benefits that are attributable to a commercial scale deployment taking place earlier than that which otherwise would have occurred . . ." S. 1462 § 105(d)(A); H.R. 2454 186(d)(3)(A). Further, section 107(c)(3) of ACELA and section 189(b)(3) of ACES requires CEDA to "charge the minimum amount in fees or compensation practicable for breakthrough technologies . . ." S. 1462 § 107(c)(3).

generally not been considered a commercially ready technology as a result of high perceived technology risk or other similar factors.”³⁰

ACELA places a stronger priority on breakthrough technologies.³¹ The Senate Energy and Natural Resources Committee that drafted the original version of CEDA, intended that “the agency would . . . seek to accommodate riskier debt and thus provide a mechanism for deployment of the most innovative technologies” and that it would employ a portfolio approach to balance this riskier debt with “revenues from other services and less risky investments.”³²

Both versions of CEDA would offer financial assistance to Clean Energy Technologies through the provision of both direct support (e.g., loans, letters of credit, loan guarantees, preferred equity or warrants, or risk insurance) and indirect support (e.g., aggregation and securitization, re-insurance, and other credit enhancements). The requirements around these types of support vary between the proposals, and as the legislative language currently stands, much of the criteria by which support is awarded will be determined in the implementation of the CEDA program and not in its authorizing legislation.³³

D. Risk Management and Transparency

The risk management protections built into the two CEDA proposals also vary. First, FCRA,³⁴ which exists to provide for consistent accounting and adequate insurance against potential exposure across federal credit programs, applies differently under each bill. Both bills maintain FCRA’s process for having the Office of Management and Budget (OMB) determine the likelihood and expected cost of default for any given financial support, and both require that funds be set aside (whether paid by the agency providing the support or the recipient of that support) to cover the default eventuality. The House bill, however, also maintains FCRA’s other risk management prong (standard across federal credit programs), that CEDA may not issue federal credit without first having received appropriations or budget authority to do so.³⁵ ACELA proposes an unprecedented exemption from this requirement.

Second, ACES and ACELA task CEDA’s Administrator with the development of policies that will, among other things, “promote transparency and openness in Administration[’s] operations,”³⁶ but the House bill provides more detailed guidance. There, indirect support activities are subject to

30. S. 1462 §102(4)(B); H.R. 2454 §183(3)(B).

31. In section III.B., *infra*, the authors defend the premise that CEDA should support “emerging technologies.” The definition of “emerging” overlaps with that of “breakthrough,” but for purposes of this article, “emerging” is meant to encompass the subset of such innovative technologies that are on the cusp of commercialization.

32. Press Release, U.S. Sen. Comm. on Energy and Natural Resources, *Bipartisan Bill Boosts Green Financing* (May 1, 2009), available at http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_Id=44c4e375-1006-45b0-b2d3-349cb2b946d4. See also Sen. Jeff Bingaman, Opinion, *Clean Energy Revolution Won’t Wait*, Politico, Sept. 20, 2010, http://www.politico.com/news/stories/0910/42388_Page2.html.

33. H.R. 2454 §§ 187(b), 188; S. 1462 § 106.

34. 2 U.S.C. § 661-661f.

35. *Id.* § 661c.

36. H.R. 2454 § 186(b)(2)(C)(ii).

transparency requirements that “promote[] effective underwriting and risk management.”³⁷ Third, both ACES and ACELA contemplate a Board of Directors (although the make-up varies between the proposals) that is charged with, among other things, ensuring CEDA financial transactions involve “industry best practices” and that the portfolio of CEDA investments are consistent with “the long-term financial stability of the Administration.”³⁸ Fourth, ACES also requires the Administration to submit quarterly financial reports and biannual activity reports to Congressional committees, and subjects CEDA to audits by both the Comptroller General and independent auditors annually.³⁹ ACES further requires the establishment of an online database of all applications, support provided, and project progress.⁴⁰ Finally, only ACES makes clear that any CEDA representative with a conflict of interest should recuse himself, or herself, from consideration of the conflicted issue.⁴¹ ACELA subjects the Administration to similar periodic reporting and auditing requirements, but requires that quarterly and annual financial reporting be submitted to the Secretary of Energy instead of Congress.⁴² ACELA also makes all of CEDA’s reports public, but does not require the development of a publicly available database.⁴³

This basic understanding of the existing proposals provides the background for consideration of principles to inform a CEDA program’s establishment in the pursuit of domestic carbon reduction goals. During consideration of each principle, legislative recommendations consistent with that principle will be provided.

III. PRINCIPLES TO INFORM CEDA

In order for CEDA to achieve its policy goals, the authors believe that the certain principles should guide its design and implementation. Specifically CEDA should (i) only support low-carbon energy technologies; (ii) focus government support on emerging technologies at the cusp of commercialization as opposed to demonstration-stage or fully-commercial technologies; (iii) embrace and account for a relatively higher risk profile than government financial support programs for commercial energy technologies; and (iv) operate efficiently and effectively within the parameters of the Congressional oversight protections provided by FCRA.

A. *CEDA Should Make a Low-Carbon Profile a Prerequisite to Financial Support*

As discussed, *supra* section II.3, both ACES and ACELA make greenhouse gas reduction a priority by making such reductions one of CEDA’s policy goals.⁴⁴ Only ACES, however, goes further and makes carbon emission

37. *Id.* § 188(c)(2).

38. S. 1462 § 105(c)(2); H.R. 2454 § 186(c)(2).

39. *Id.* § 190(g), (h), (i)(1)-(3).

40. *Id.* § 190(j)(1)(D).

41. *Id.* § 171(e)(4).

42. S. 1462 § 108(f).

43. *Id.* § 108(i)(5).

44. H.R. 2454 § 841(c); S. 1462 § 104.

reduction, avoidance, or sequestration a prerequisite to CEDA support.⁴⁵ By contrast, ACELA would allow CEDA support if a technology meets one of the following three conditions: (i) it reduces or avoids carbon; (ii) it increases efficiency; or (iii) it diversifies the U.S. energy supply. As discussed above, ACES requires that one of the latter two criteria be met in addition to the first.⁴⁶

If CEDA is to succeed in providing incentives that have a material impact on the reduction of domestic carbon emissions over time, the program should include the ACES carbon prerequisite instead of the ACELA formulation that has diversification as an independent criterion for CEDA support. An independent efficiency criteria is not problematic because any technology that increases the efficiency, be it through enabling a reduction in transmission losses, facilitating demand response, creating energy storage options, or enhancing building efficiency retrofits (to name a few) will also, almost always, have a net carbon neutral or reducing impact. The same is not necessarily true with regard to technologies that serve to diversify supply. With energy diversity as an independent policy goal, CEDA support theoretically could be extended to technologies that increase supply diversity, but also increase carbon emissions. This potential is not necessarily mitigated, as some may contend, by the fact that ACELA also requires that its projects have “a favorable balance of environmental effects if the entire technology system is considered.”⁴⁷ This language clearly intends to subject potential CEDA projects to a life cycle environmental impact analysis for impacts other than carbon emissions. The authors believe that this is an important environmental requirement that ACES lacks and that should be included in any final CEDA legislation. Such an analysis should (and typically does) include the effects of natural resource extraction processes (such as coal or uranium mining), operational impacts (such as noncarbon air pollution or the use of water in cooling processes), and post generation impacts (such fuel waste toxicity). However, it is less clear if the drafters also intended “environmental effects” to include a life cycle carbon analysis since in other places in the bill carbon is dealt with explicitly.

Similarly, the authors believe that emerging oil, gas, coal, biomass, and biofuel technologies should only be supported to the extent they actually represent a reduction in GHG emissions. Even if federal legislation around climate change continues to lag in the short term, American policy to address climate change problems should not support the development of new technologies and commercial infrastructure if currently externalized carbon emissions costs will make those technologies less competitive or even uneconomic in the future. This could be assured legislatively by imposing a limit on the projected amount of lifecycle greenhouse gases that emerging fuels and energy generation projects are allowed to emit once reaching commercial scale. These limits would also provide certainty to the earlier-stage technology developers, venture capital, and equity investors factoring CEDA into their business plans as a future funding source.

Finally, both proposals also instruct the Administration to “give the highest priority to investments . . . that will achieve the maximum greenhouse

45. H.R. 2454 § 706(c)(3).

46. S. 1462 § 201(h)(5).

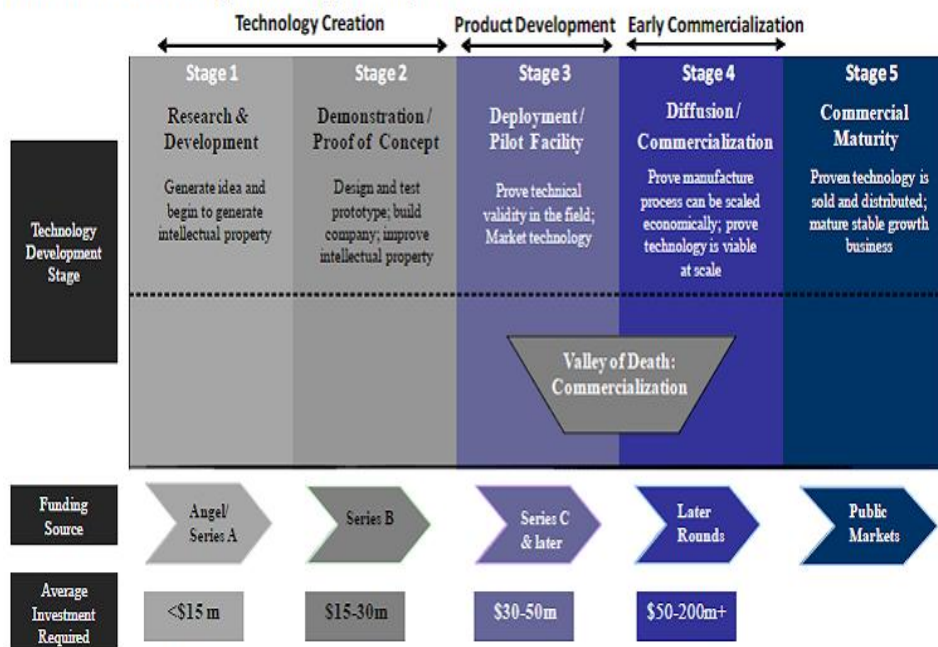
47. S. 1462 § 102(5)(B).

gas emission reductions within a reasonable . . . time[frame].”⁴⁸ The determination of a reasonable timeframe here should contemplate the emerging stage of technology on which the authors believe CEDA should be focused.

B. CEDA Should Support Emerging Rather than Mature Renewable Energy Technologies

In addition to the carbon emissions requirement, the authors believe that CEDA should target promising “emerging”⁴⁹ technologies that would fall into what is called “the valley of death” if not for the benefit of support provided by CEDA. As outlined, *supra* section II, the different CEDA proposals target federal support at various points along the technology development cycle based on where the different legislative sponsors believe government support is necessary or would be most effective. A focus on emerging renewable energy technologies would concentrate CEDA’s resources on a key, but neglected link on the development chain for which sufficient private investment is demonstrably lacking. This investment shortfall makes adequate government investment vital to the rapid and sustained deployment of increasingly efficient renewable energy technologies necessary to combat climate change, grow the economy, and increase energy independence.

Table 1: The Clean Energy Technology Development Chain



Adopted from New Energy Finance and Clean Energy Group, “Clean Energy Investment Trends,” November 4, 2009

Figure 1

48. S. 1462 § 106(a)(1)(c)(iii)(III); H.R. 2454 § 187(c)(3)(D).

49. We use the term, “emerging” instead of the ACELA term, “breakthrough” because in contrast to the legislative definition, commercial usage the former term generally suggests technologies on the cusp of commercialization while the latter suggests an earlier phase of development; *see infra* stage 1 or 2 of Figure 1.

1. The “Valley of Death” Explained

Influential energy market researchers have recently explored the “valley of death” problem in the context of clean energy technology development. In June 2010, Bloomberg New Energy Finance (NEF) released a study commissioned by Clean Energy Group entitled, “Crossing the Valley of Death: Solutions to the Next Generation Clean Energy Financing Gap.”⁵⁰ The report is the culmination of a six-month process of interviewing “venture capitalists, project developers, attorneys, insurers, private equity [investors], commercial bankers, and others” on the question of locating and addressing shortfalls of capital in the clean energy development cycle.⁵¹ The report frames the issue as a structural problem that does not plague the other stages of the development cycle:

This is not a problem caused by a lack of interest by the various parties involved. In fact, no private funder has the mandate to deploy capital addressed at this particularly challenging point in the risk/reward spectrum. Venture capital firms have high technology risk tolerance but relatively limited capital, and they demand short-to-medium returns. Project finance funders and bank lenders typically have high levels of capital and can commit to longer-term investments, but they have little or no technology risk tolerance. *No existing class of financial institutions is effectively positioned to address this particular risk/return category.*⁵²

The “valley of death” is the point in the prototypical development cycle of a new technology (*see supra* section III.B. Figure 1) after a team of innovators has applied fundamental research to a technological problem, proven that their concept is sound, and successfully demonstrated the basic efficacy of the technology through a prototype, but prior to the point of having demonstrated an efficient manufacturing process or deployed a project at scale in the field. It is called the “valley of death” because without additional investment at this stage, promising technologies sometimes are left languishing and unexploited in a “valley” of insufficient capital.⁵³ A technology poised to enter the “valley of death” has arguably passed through the riskiest part of its development and its early venture capital investors typically anticipate the rewards of high, monopolistic returns through exploitation of intellectual property. However, at this point in the cycle, neither the actual costs of manufacturing the technology, nor its performance in the field under varying conditions have been established. In this sense, the technology still carries technology risk and is too risky for traditional project finance.⁵⁴ At the same time, the magnitude of investment required to scale up the technology is beyond reach of most venture capital

50. BLOOMBERG NEW ENERGY FINANCE, CROSSING THE VALLEY OF DEATH: SOLUTIONS TO THE NEXT GENERATION CLEAN ENERGY PROJECT FINANCING GAP (2010), *available at* http://www.cleangroup.org/Reports/CEG_BNEF-2010-06-21_valleyofdeath.pdf; *see also* ELIOT JAMESON, CALIFORNIA CLEAN ENERGY FUND (CALCEF), FROM INNOVATION TO INFRASTRUCTURE: FINANCING FIRST COMMERCIAL CLEAN ENERGY PRODUCTS (2010), *available at* http://www.calcef.org/innovations/activities/FirstProjFin_0610.pdf; U.S. PARTNERSHIP FOR RENEWABLE ENERGY FINANCE, THE CLEAN ENERGY DEPLOYMENT ADMINISTRATION (CEDA): A COMPARISON OF THE SENATE, HOUSE AND GREEN BANK PROPOSALS (2010), *available at* <http://www.uspref.org/white-papers/>.

51. *Id.* at 3.

52. *Id.* at 5 (emphasis in original).

53. *Id.*

54. *Id.*

funds.⁵⁵ In a given case, large, well-capitalized energy or technology companies fill the gap through acquisitions⁵⁶ or joint ventures, but even these companies have limited resources, and their ability and/or willingness to invest is subject to the vagaries of their actual or perceived financial performance, business or political strategies, and other idiosyncratic factors. In addition, once such a company has acquired such a technology, its desired pace and direction of deployment will be influenced by the internal dynamics of the company's various constituencies, existing infrastructure investments, competitive pressures, and other projects in development. By contrast, an institution like CEDA, with a focus and a structure along the lines the authors suggest in this paper, could make investment decisions based on the potential for efficient and effective climate change mitigation, economic growth, and energy independence.

Systematically bringing new technologies across the "valley of death" and to market with the support of CEDA is a necessary and fundamental element of a comprehensive renewable energy deployment policy because such a strategy will increase the chances of yielding game-changing technologies that can operate (alone or in concert with other technologies) to radically increase the efficiency of renewable energy so that it becomes competitive with traditional sources of generation as quickly as possible. If adequately funded and well-operated, a CEDA focused on this point in the development cycle would provide additional financing options for investors (including private equity and venture capital funds, financial institutions, and the large corporate players mentioned above), and would increase the flow of investors and early stage investments.

Supporting emerging technologies which, once commercialized, will potentially be able to compete with traditional generation in the absence of policy support is also important given the ongoing uncertainties surrounding the existence of other forms of policy support. Specifically, (i) the absence in the near term of federal demand-side stimulus policy, such as a renewable electricity standard or a carbon price, and the efforts at the state level to weaken or overturn existing renewable portfolio standards;⁵⁷ (ii) the pressures on utilities by public utilities commissions and other political actors to justify expensive clean energy procurement in an atmosphere of low economic growth;⁵⁸ and (iii) the expectation of low gas prices (making new gas generation procurement attractive relative to renewable generation) together with (iv) the reluctance of Congress to put permanent supply-side subsidies into the tax code, collectively signal the need to dedicate significant national resources to developing all of the most promising technological solutions that could make renewable energy competitive without these policies. This potential disproportionate impact of a CEDA

55. *Id.* Bloomberg estimates the capital requirements for such projects to be in the "hundreds of millions of dollars" for each investment, *See* Bloomberg, *infra* note 69, at 4.

56. *E.g.*, Katie Fehrenbacher, *BP Buys Up Verenum's Biofuel Biz for \$98.3M*, GIGAOM, July 15, 2010, <http://gigaom.com/cleantech/bp-buys-up-verenums-biofuel-biz-for-98-3m/>.

57. *E.g.*, Dan D'Ambrosio, *Is It Worth 23.6 Billion to Have Green Energy*, HARTFORD ADVOCATE, Aug. 3, 2010, <http://www.hartfordadvocate.com/featured-news/is-it-worth-23-6-billion-to-have-green-energy>. For California, see Kevin O'Leary, California: Brown Puts Whitman on the Defensive Over Greenhouse Gases, TIME, Aug. 6, 2010, <http://www.time.com/time/nation/article/0,8599,2009013,00.htm>.

58. *E.g.*, Beth Daley, *AG Wrests Price Out From Cape Wind*, BOSTON GLOBE, July 31, 2010, *available at* http://www.boston.com/news/local/massachusetts/articles/2010/07/31/ag_wrests_price_cut_from_cape_wind/.

focused on emerging technologies, together with the aforementioned lack of private investors at this stage in the development cycle, are why the case for targeted, institutionalized government intervention at the valley of death is so strong.

2. CEDA Support is Most Appropriate for Emerging Technologies

CEDA support is most appropriate for emerging technologies. To fully appreciate the need for, and nature of, a CEDA focused on emerging technologies, it is helpful to contrast it with the federal government programs currently in place to support other stages of the development cycle. The deployment of mature renewable technologies (defined here as Commercial Maturity – *see supra* section III.B. Figure 1, stage 5) has traditionally been encouraged by the government through the tax system.⁵⁹ The goal has been to attract capital flows to investment in mature renewable energy technologies and then effectively exempt these flows, and in some cases the return on them, from taxation, and also to permit the accelerated depreciation of the assets financed by them. With this structure in place, the investment community began to create innovative structures to monetize the tax benefits.⁶⁰ Many projects were and are built based on this subsidy system which, although subject to high transaction costs, has the virtue of transparency of implementation by the government.⁶¹ Administered through the tax system, these programs require minimal technical investigation or evaluative judgment – as long as the government confirms that the facility qualifies in the pre-established categories of technology, is successfully constructed, and in the case of the PTC, is operating on an ongoing basis, the goals and requirements of the program – to deploy the technology – have been met.⁶² Contrast this approach to the government’s support of

59. Through use of the U.S. Internal Revenue Code (Code) the government’s strategy has been to create a class of “tax equity” investors who, in exchange for their investment, accept a portion of their return in the form of tax credits or accelerated depreciation to reduce tax liability on other income, effectively reducing the “true” equity required from developers and stimulating financial innovation to monetize the benefits. Specifically, the Code permits renewable energy lenders, developers, and investors to claim accelerated depreciation deductions and certain taxpayers to claim a tax credit based on the production and sale of electricity (PTC) for qualified wind facilities placed in service before Jan. 1, 2012, and certain other qualified facilities (i.e., closed loop biomass, open-loop biomass, geothermal, small irrigation, hydropower, and hydrokinetic facilities) placed in service before Jan. 1, 2014. Other technologies placed in service (mostly) before Jan. 1, 2017, qualify for an investment tax credit under section 48 of the Code (ITC) for 30% (i.e., solar facilities, fuel cells, and small wind projects) or 10% (i.e., geothermal, microturbines, combined heat and power) of the project’s qualifying costs. In Feb. of 2009, Congress addressed the absence of the traditional financing sources due to the financial crisis in the American Recovery and Reinvestment Act (ARRA). Section 1603 of ARRA provides that projects that qualify for the PTC may instead choose the ITC, and those qualifying for the ITC (including those which previously only qualified for the PTC) may instead be awarded a cash grant (ITC Grant) equal to the value any otherwise applicable ITC. With respect to the ITC Grants, ARRA also relaxed some of the restrictions applicable to the PTC and the ITC on passive loss, at risk capital, leasing and ownership, third party power sales, and recapture of the grant upon sales. The ITC grant option currently applies only to projects that have commenced construction by Dec. 31, 2010. I.R.C. § 48; American Recovery and Reinvestment Act of 2009 § 1603(e)(1), Pub. L. No. 111-5, 123 Stat. 141 (2009).

60. JOHN P. HARPER, ET AL., WIND PROJECT FINANCING STRUCTURES: A REVIEW & COMPARATIVE ANALYSIS at I, (2007), available at http://www.linsaat.com/uploads/TrbBlogs/pdfs_4/48286_1251749031_176.pdf.

61. *Id.* at 36-38.

62. *Id.* at 32.

technology creation (*See supra* section III.B. Figure 1 stages 1 and 2) under the Advanced Research Projects Agency (ARPA-E), in which DOE scientists are deeply involved in evaluating the potential of various technologies vying for government support.⁶³ The government's goal in this case is to foster the development of the most promising ideas – it must, therefore, enter into a qualitative determination of relative merit.⁶⁴ CEDA's task – to assist companies to bring their technologies across the “valley of death” – is at the midpoint between these government interventions.⁶⁵ Like the ARPA-E program, the selection of CEDA investments will require evaluation of the technologies, but unlike the government R&D programs, CEDA evaluative process would be structured around the potential for cost competitiveness and efficiency (as measured in dollars per MW and per MWh) in addition to greenhouse gas reduction potential. By contrast, the tax code driven system that promotes mature renewables is defined by non-discretionary requirements that set out which technologies qualify, and thus requires little or no qualitative judgment by government officials. Thus, CEDA will find itself in the unenviable position of “picking winners” to some extent. The typical criticisms that government is not well-positioned to make business decisions can be mitigated by the use of non-governmental professional finance staff compensated at private sector rates and supported by technical contractors. But more importantly, CEDA's role in identifying and investing in the most promising emerging technologies is justified by the lack of other investors at this stage of renewable energy technology development cycle and is necessary given the imperatives of climate change.

3. CEDA Products and Management

CEDA should address, on a long-term basis, the structural lack of capital in the “valley of death,” and should make available a variety of products designed to address the diverse challenges facing emerging renewable energy technologies. Because of the structural problem of the “valley of death,” CEDA should be well capitalized and designed, not as a temporary stimulus program, but as a long-term institutional presence. It should aim to support a portfolio of projects diversified on the basis of fuel type (with renewable resources such as wind, water, geothermal steam, and solar counting as “fuel” for these purposes), not the perceived riskiness or maturity of a technology. At the same time, CEDA's portfolio should not be subject to an arbitrary floor or cap on its investments in a given technology. The overarching goals of CEDA dictate that the net greenhouse gas impact of the life cycle of a technology (*see* discussion *supra* section III.A), its potential to have transformational or synergistic impact on renewable energy systems (e.g., large scale energy storage with wind and

63. DEP'T OF ENERGY, ADVANCED RESEARCH PROJECTS AGENCY-ENERGY, <http://arpa-e.energy.gov/About/About.aspx> (last visited Oct. 25, 2010).

64. *Id.* (follow the “Mission” hyperlink).

65. Press Release, Sen. Comm. On Energy & Nat'l Res., Bingaman on Investments in Clean Energy Technology (July 22, 2009), *available* at http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=f85df78d-4766-4455-bbee-c298b360dd5b&Month=7&Year=2009&Party=0.

solar), and its potential to quickly reduce the levelized cost of energy gap with fossil fuels should be the main criteria to receive CEDA assistance.

In addition to a continuing institutional presence, CEDA should have specialized staff exempt from federal pay scales.⁶⁶ Such staff should come from the investment banking, private equity, and insurance industries, be qualified to assess the specific barriers to commercialization faced by different technologies, and be able to design products targeted at removing those barriers. If CEDA remains within DOE, the number of critical staff pay exemptions from federal pay scale requirements, currently at twenty, should be more than doubled.⁶⁷ Staff must also be hired, to the extent possible, without being subjected to extended hiring processes. If necessary, third party engineering firms with up-to-date market information could be contracted to support the finance staff and in-house technical experts in application of the ETAC. The Title XVII Program's Financial Institution Partnership Program, which is starting to gain traction, and the Overseas Private Investment Corporation's selection of private equity fund managers for its chosen investment funds, may provide good models in determining ways to increase the efficiency of the process.⁶⁸

The authors' view is that, fortunately, both ACES and ACELA clearly contemplate, through the size of their appropriations and management structure, a long term institutional presence and meaningful private sector participation. ACES technically goes further towards institutional independence by making CEDA a free-standing corporation outside DOE. While this article does not take a position as to which structure is preferable, this need for sufficient expert staff is key. This staff must be empowered to make subsidy cost determinations (with OMB) at the speed necessary to facilitate private sector investment.

CEDA should make available a variety of financing instruments targeting the needs of companies facing the "valley of death." Various innovative debt, equity, securitization, and insurance products are being discussed in the literature,⁶⁹ but regardless of the product, the key design principle should be that each of them addresses the underlying problem of the "valley of death" either by directly providing the means for a technology to "cross" the valley to the point of commercialization where it can subsequently be privately financed, or by bringing to the table a class of investor willing and able to target such technologies. For example, CEDA's provision of 100% of the debt capital required to build a new energy storage manufacturing facility which could not otherwise source financing *directly* transports such technology across the "valley of death." By contrast, in respect to the same hypothetical project, CEDA's provision of a partial guarantee to private banks to reduce the level of risk or its sale of participations after the construction phase expands the class of investors (and leverages the public's investment). In another example, if a senior debt

66. See discussion, *infra* section III.C.

67. ACELA § 105(e)(3).

68. OVERSEAS PRIVATE INV. CORP., <http://www.opic.gov/investment-funds> (last visited Oct. 25, 2010).

69. BLOOMBERG NEW ENERGY FINANCE, CROSSING THE VALLEY OF DEATH: SOLUTIONS TO THE NEXT GENERATION CLEAN ENERGY PROJECT FINANCING GAP (2010), available at http://www.cleaneenergy.org/Reports/CEG_BNEF-2010-06-21_valleyofdeath.pdf; Eliot Jamison, California Clean Energy Fund, From Innovation to Infrastructure: Financing First Commercial Clean Energy Projects (June 2010), available at http://www.calcef.org/innovations/activities/FirstProjFin_0610.pdf.

shortfall prevents a project from moving forward, CEDA could offer mezzanine debt to reduce overall senior debt requirements. Similarly, if there is a specific risk relating to the performance of new technologies hindering a bankable supply contract, efficacy insurance (or reinsurance) could be used to supplement manufacturer warranties ultimately passed through to offtakers. In a final example and in furtherance of President Obama's executive order to government agencies in 2009 setting the goal of "increasing agency use of renewable energy and implementing renewable energy generation projects on agency property" CEDA could perform a clearinghouse function matching governmental offtakers with renewable energy providers, with or without providing other financial support.⁷⁰

C. CEDA Should Embrace and Account for an Emerging Technology Risk Profile

In order for CEDA to effectively incorporate a carbon reduction, avoidance, or sequestration requirement and target financial support for emerging technologies in the manner discussed in sections III.A and B, *supra*, the program must also incorporate a third principle; that is, acceptance of a material level of risk on a per project basis not contemplated by existing federal energy financing support.⁷¹ This need follows from the fact that the risk involved in financing emerging technologies yet to prove their efficacy on a commercial scale is higher than that associated with financing commercial technologies. If CEDA is to provide incentives that attract private sector dollars at this stage along the technology development cycle, Congress and the Executive Branch must be willing to embrace higher expected default rates than would be associated with mature technology support but with the potential to deploy transformative technologies.

This section first provides a brief explanation of the risk management function the Federal Credit Reform Act of 1990 (FCRA) plays in relation to federal credit programs. It then suggests that the Office of Management and Budget (OMB) subsidy cost determination process should accept and adapt to this proposed higher risk profile for projects receiving support under CEDA, and that the self-sustaining mandate and the loan loss reserves included as an alternative to FCRA, as proposed in ACES and ACELA, may undermine this attempt to embrace riskier investments within the established federal risk management framework.

70. Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 5, 2009); *see also* Press Release, OFFICE OF THE PRESS SECRETARY, President Obama Signs an Executive Order Focused on Federal Leadership in Environment, Energy and Economic Performance (Oct. 5, 2009), *available at* http://www.whitehouse.gov/the_press_office/President-Obama-signs-an-Executive-Order-Focused-on-Federal-Leadership-in-Environmental-Energy-and-Economic-Performance.

71. The current risk management aspects of CEDA proposals are described in section II.D, *supra*.

1. FCRA as a Risk Management Tool

Congress passed FCRA to better account for and manage the risk of government-provided loans and loan guarantees.⁷² Prior to FCRA's passage, federal agencies were not required to account for the potential costs of loan guarantees and other financial support on-balance sheet, so agencies provided loans and guarantees without having to allocate funds that would be required to cover a potential default. As a result, estimation of and accounting for risk exposure related to federal credit support lacked consistency across government agencies.⁷³ FCRA addresses these issues in two ways. First, section 504(b) of FCRA requires that agencies receive specific authority from Congress prior to the issuance of all loans and loan guarantees (this requirement will be discussed *infra* in section III.D).⁷⁴ Second, FCRA prescribes a methodology that agencies must follow, under the supervision of OMB, to determine, account for, and track the subsidy cost of all federal credit provided. As described above, the "subsidy cost" is "the estimated present value of the cash flows from the Government (excluding administrative expenses) less the estimated present value of the cash flows to the Government resulting from a direct loan or loan guarantee, discounted to the time when the loan is disbursed."⁷⁵ The law requires agencies to account and set aside funds for the subsidy cost at the time the support is initiated (and to adjust the expected cost over the term of the financial support, if appropriate), instead of waiting until an event of default occurs to try and find funds to cover any government liabilities.⁷⁶

Both the agency providing credit and OMB must engage in risk diligence as part of determining the proper risk subsidy score prior to the award of any financial support. Significant variation exists among the various federal credit

72. 2 U.S.C. § 661.

73. See section 185.2, OMB Circular No. A-11 (2009). See also *U.S. Department of Energy's Loan Guarantee Program and Its Effectiveness in Spurring the Near-term Deployment of Clean Energy Technology: Hearing Before the S. Comm. on Energy and Natural Resources*, 110th Cong. 2 (Sept. 23, 2010) [hereinafter *Loan Guarantee Program*] (testimony of Michael D. Scott, Managing Director, Miller Buckfire & Co., L.L.C.) (stating "[t]his approach did not provide legislators or policymakers with the true budget impact of a Federal credit program and was inconsistent with the budgeting process in the non-credit spending programs of the U.S. Government.").

74. 2 U.S.C. § 661c(b). FCRA reaches all agencies providing direct loans and loan guarantees to the private sector, and this article assumes that all of the federal credit and enhancement activities currently contemplated under CEDA would fall within FCRA's broad definition of either a "direct loan" or "loan guarantee." The law defines "direct loan" as "a disbursement of funds by the Government to a non-Federal borrower under a contract that requires the repayment of such funds with or without interest." 2 USC § 661a(1). The law defines "loan guarantee" as "any guarantee, insurance, or *other pledge* with respect to the payment of all or a part of the principal or interest on any debt obligation of a non-Federal borrower to a non-Federal lender . . ." 2 USC § 661a(3) (emphasis added to highlight the broad array of support subject to the FCRA).

75. OFFICE OF MGMT. & BUDGET, Circular No. A-11 § 185.2 (2008), available at http://georgewbush-whitehouse.archives.gov/omb/circulars/a11/current_year/s185.pdf. FCRA itself defines "cost" as the estimated long-term cost to the Government of a direct loan or loan guarantee or modification thereof, calculated on a net present value basis, excluding administrative costs and any incidental effects on governmental receipts or outlays. *Id.* § 661a(5)(A). Interestingly, government sponsored entities like Freddie Mac and Fannie Mae are not subject to FCRA's requirements.

76. 2 U.S.C. § 661c(d)(2).

programs (and, as such, OMB's cost determinations) with regard to the type of risk that exists, the complexity of and variance between financial products offered, and the dollar amounts involved.⁷⁷ However, despite this variation, the "vast majority of . . . [historic] Federal credit [has been] extended in homogeneous transactions characterized by high volumes and relatively low dollar amounts,"⁷⁸ involving student, housing, and various types of domestic and international small business loans.⁷⁹ Even with these perhaps relatively easier transactions from a risk perspective, the General Accounting Office (GAO) has, on several occasions, expressed concern over the difficulties involved in accurately predicting subsidy costs due to these variations and the general difficulty inherent in the risk analysis required by a complex subsidy cost determination.⁸⁰ Despite these difficulties, annual federal budgets and related analyses demonstrate that FCRA's subsidy cost determination and accounting processes have proven a mostly workable attempt at providing the Executive Branch with an apples-to-apples risk management and accounting system for all federal credit programs.⁸¹

2. The Subsidy Cost Determination Process Should Embrace the Risk Inherent in CEDA's Targeted Support

The Title XVII experience has demonstrated that the OMB subsidy cost determination methodology and implementation process has been less than effective for technologically and financially complex transactions, and CEDA will have difficulty embracing the heightened level of technological risk support associated with emerging technologies in a manner that meshes with the private sector "valley of death" without some level of reform. OMB has developed subsidy cost determination methodologies and performed due diligence around

77. See, e.g., GEN. ACCOUNTING OFFICE, DOE, Further Actions Are Needed to Improve DOE's Ability to Evaluate and Implement the Loan Guarantee Program, GAO-10-627 (July 2010); GEN. ACCOUNTING OFFICE, Export Import Bank: Performance Standards for Small Business are in Place but Ex-Im Is in the Early Stages of Measuring Their Effectiveness, GAO-08-915 (July 2008); William B. Shear, SBA, GEN. ACCOUNTING OFFICE, Improvements Made, but Loan Programs Face Ongoing Management Challenges, GAO-06-605T, (Apr. 6, 2006) (testimony before the Subcommittee on Federal Financial Management, Government Information, and International Security, Committee on Homeland Security and Governmental Affairs).

78. *Loan Guarantee Program*, *supra* note 73, at 7 (testimony of Michael D. Scott, Managing Director, Miller Buckfire & Co., L.L.C.).

79. See OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, Analytical Perspectives: Budget of the United States Government, Fiscal Year 2011 (2010) Tables 22-4 and 22-5, 368-370 (listing the varied array of federal credit programs and average subsidy costs).

80. William B. Shear, SBA, GEN. ACCOUNTING OFFICE, Improvements Made, but Loan Programs Face Ongoing Management Challenges, GAO-06-605T (Apr. 6, 2006) (testimony Before the Subcommittee on Federal Financial Management, Government Information, and International Security, Committee on Homeland Security and Governmental Affairs), U.S. Senate; GEN. ACCOUNTING OFFICE, Mortgage Financing: FHA's \$7 Billion Reestimate Reflects Higher Claims and Changing Loan Performance Estimates, GAO-05-875 (Sept. 2005); GEN. ACCOUNTING OFFICE, Housing Finance: Options to Help Prevent Suspensions of FHA and RHS Loan Guarantee Programs, GAO-05-227 (Mar. 2005); GEN. ACCOUNTING OFFICE, Maritime Administration: Weaknesses Identified in Management of the Title XI Loan Guarantee Program, GAO-03-657 (June 2003).

81. OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, Analytical Perspectives: Budget of the United States Government, Fiscal Year 2011 ch. 22 (2010) and OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, Analytical Perspectives: Budget of the United States Government, Fiscal Year 2010 ch. 7 (2009).

large infrastructure projects in the past,⁸² but the agency had not often faced the level of risk diligence associated with innovative technology support prior to the emergence of the Title XVII Program. Although the Title XVII Program faced several obstacles at its inception (some of which will be considered *infra* in section III.D), one of the more significant issues was, and continues to be, DOE and OMB's struggle to develop a working methodology and process for subsidy cost determination. Early on in the program's development, the subsidy cost system was not yet determined, causing a significant amount of confusion among applicants for support and consternation on the part of the Executive Branch.⁸³ More recently, some stakeholders have continued to characterize OMB's process under the Title XVII Program as ambiguous, inscrutable, and slow, causing uncertainty on the part of the industry the program is designed to support.⁸⁴ These stakeholders point to understaffing, insufficient energy and finance expertise on the part of federal staff at both DOE and OMB, and an imperfect applicability of OMB's standard subsidy cost calculation methodologies to the unique characteristics of large energy infrastructure projects. Currently, although most observers agree operations under the program have markedly improved,⁸⁵ the highly complex and specific nature of each applicant for innovative or commercial support under Title XVII still requires a significant amount of separate and specialized diligence by DOE and OMB in each case prior to final determination of each subsidy cost.⁸⁶

82. See e.g., DEP'T OF TRANSPORT FED. HIGHWAY ADMIN., Report to Congress Transportation Infrastructure Finance and Innovation Act Credit Program (Sept. 2008), available at http://www.fhwa.dot.gov/ipd/pdfs/tifia/tifia_2008_rtc.pdf (TIFIA biannual report to Congress) (TIFIA, which began in 1998, is a federal credit program that provides loans, guarantees and lines of credit to regional and national surface transportation products that are similar to energy infrastructure projects in financial magnitude but do not involve as specialized assessment and diligence needs as energy infrastructure, and lack the risk associated with emerging technology projects).

83. *Loan Guarantee Program*, supra note 73, at 6 (testimony of Timothy Newell, Senior Advisor, U.S. Renewables Group) ("This is not to say that the program has worked well since the beginning, when there was insufficient staff and capacity to allocate funds quickly and effectively."); GEN. ACCOUNTING OFFICE, Dep't of Energy: *Key Steps Needed to Help Ensure the Success of the New Loan Guarantee Program for Innovative Technologies by Better Managing Its Financial Risk*, GAO-077-339R at 4 (Feb. 28, 2007) ("DOE has not developed policies or procedures for estimating administrative or subsidy costs . . . DOE is asking potential borrowers – who have an incentive to underestimate the costs – to provide preliminary estimates of subsidy costs so that it can gain experience in developing them.").

84. *Loan Guarantee Program*, supra note 73, at 6-7 (testimony of Timothy Newell, Senior Advisor, U.S. Renewables Group) (stating "[r]enewable energy trade associations and members of Congress are still seeking to fully understand . . . why OMB appears to be a major cause of delay in issuing these guarantees"); Katherine Ling, *OMB Rebuked at Loan Guarantee Hearing, Despite Absence*, ENV'T & ENERGY DAILY, Sept. 24, 2010, available at http://www.elp.com/index/from-the-wires/wire_news_display/1269872312.html (quoting Sen. Jeff Bingaman as stating, "[a]s far as I can tell from the testimony today [OMB is] a significant part of the problem.").

85. This Administration has made ramping up the speed of loan guarantee awards, and streamlining the review process, a main DOE priority. See Press Release, DEP'T OF ENERGY, DOE Secretary Chu Announces Changes to Expedite Economic Recovery Funding (Feb. 19, 2009), available at <http://www.energy.gov/news2009/6934.htm>.

86. *Loan Guarantee Program*, supra note 73, at 10 (testimony of Jonathan Silver, Executive Director of the Loans Program Office, DOE) ("[T]he deals processed by the loan programs are often large and complex, sometimes involving billions of dollars and an array of diverse parties. As a result, to ensure necessary protection of taxpayer resources, significant due diligence and negotiations are required.").

To some degree, all of these issues arise from the reality that the government financing structure is not traditionally designed or equipped to engage in the diligence necessary, within a private-sector compatible timeframe, to take on the risk analysis involved with support under the Title XVII Program, and to a greater extent, the type of CEDA program this article espouses. The OMB process is designed to ensure sufficient protection of federal dollars and to serve as a check against overly risky government lending. So, by design the agency and GAO, which is charged by Congress with reviewing agency performance on this front, is not used to embracing nonstandard risk.

These issues beg the question of whether the OMB subsidy cost determination process makes sense as the means by which to address credit program risk within a CEDA focused on emerging technologies. Of the at least fifty federal credit programs in existence, all operate in compliance, and in some level of accord with, the OMB process. Interestingly, despite Title XVII's problems, none of the stakeholders interested in CEDA have advocated (at least publicly) that the program receive an exemption from the standard subsidy cost determination process. It is not clear whether this lack of legislative opposition is due to the belief that such a change would face tremendous political barriers, whether it is better to try and avoid the OMB process in a more discrete manner (*see* discussion *infra* section III.D.), or whether it is understood that eliminating the existing FCRA protections is a short-sighted policy decision. The authors believe that although the Title XVII experience illustrates that the subsidy cost process is not perfect, it is prudent for CEDA to operate within its parameters as a matter of sufficient and consistent federal accounting, taxpayer protection, and as a means to ensure long-term Congressional support for the program. If Congress decides to capitalize CEDA with \$10 billion or \$7.5 billion, as is currently proposed in ACELA and ACES, respectively (the majority of which is to be available to cover subsidy costs), the Legislature is signaling its view that financing support involving emerging technology risk is a productive government intervention and an appropriate use of government funds.⁸⁷ This means that relatively higher subsidy costs are acceptable and appropriate for projects receiving CEDA support and that the White House and OMB must accept and make all efforts to implement this Congressional will by working with DOE to issue accurate subsidy cost determinations in a transparent and efficient manner.

To this end, OMB must be given the freedom to assess accurate subsidy cost scores, including high subsidy costs, based on available due diligence without facing pressure from politicians, technology developers, or others to award lower cost determinations.⁸⁸ The GAO has determined, at least in the case of Title XVII, that OMB has been insufficiently cautious in its subsidy cost

87. H.R. 2454 § 184(e)(1); S. 1462 § 107(a)(6)(A).

88. *See* Richard W. Caperton, CTR. FOR AM. PROGRESS, *Protecting Tax Payers from a Financial Meltdown*, March 8, 2010, available at http://www.americanprogress.org/issues/2010/03/nuclear_financing.html (referring to CBO and GAO estimates that subsidy costs for a nuclear reactor loan guarantee should be 25, 30 or 50% of the cost of such support).

determinations.⁸⁹ CEDA's role should not be to mask the risk associated with a given technology, but to decide whether that technology shows a level of promise worthy of the government taking on the true related financing risk. Accurate subsidy cost determination means that each federal credit award may involve a higher subsidy cost than has been the case under Title XVII or other programs, but it ensures the government and therefore taxpayers will not be on the hook for more than Congress has appropriated to CEDA. As stated in the recent Senate Committee on Energy and Natural Resources Committee Hearing about the Title XVII Program, one panelist stated that "[FCRA] is a very good tool to measure the net present value of the long-term cost to the U.S. Government of any Federal credit program, has a good reputation over the 20-years since enactment, and absent extreme carelessness on the part of the program agency and OMB, is going to properly protect the taxpayer."⁹⁰ Subsidy cost determinations should equal the actual determination of likely cost to the government based on technological and market diligence, and should not be politicized. If a potential recipient of credit support that is intended to contribute to or fully cover its subsidy cost believes the government determination is too high, the government must then determine whether the government should take on any portion or all of that cost in light of CEDA's policy goals.⁹¹ The level of subsidy costs for a diversified CEDA program should be viewed through the lens of whether technologies supported under the program achieve the goal of reducing overall greenhouse gas emissions.⁹²

Further, the cost determination process and support award system must be made transparent. Under Title XVII, neither DOE nor OMB has made public the actual subsidy cost determinations of individual support provided. Without this information, the private sector lacks certainty about the government's view of the risk involved with any given credit support, the knowledge of which is an essential part of the investors' own diligence. The lack of transparency also contributes to a lack of confidence on the part of Congress about whether the Title XVII program is making good investments using taxpayer dollars and whether CEDA could be trusted to do the same.⁹³ Increased transparency, through a public database detailing the support provided, and annual GAO or other reports reviewing the program's performance, will go a long way in

89. GEN. ACCOUNTING OFFICE, Dep't of Energy: New Loan Guarantee Program Should Complete Activities Necessary for Effective and Accountable Program Management, GAO-08-750 at 20-21 (July 2008).

90. *Loan Guarantee Program*, *supra* note 73, at 7-8 (testimony of Michael D. Scott, Managing Director, Miller Buckfire & Co. L.L.C.).

91. See Peter Behr, *Constellation Pullout from Md. Nuclear Venture Leaves Industry Future Uncertain*, CLIMATE WIRE, Oct. 11, 2010 (reporting that in the case of the Title XVII Program, Constellation would not accept the Administration's determination of an 11.6% subsidy cost for its proposed nuclear reactor when it expected the subsidy cost to be below 2%) and Mark Peters, *Constellation Energy Nuclear Project Snags*, WALL ST. J., Oct. 11, 2010.

92. Other potential paybacks of CEDA due to the commercialization of high-achieving carbon-reducing technologies clearly include the development of a new technology market and jobs and increased energy independence, to name a few.

93. Letter from Senators Claire McCaskill, Max Baucus, Russ Feingold and Michael Bennett to the Honorable Harry Reid, Majority Leader, July 15, 2010 (stating concern that CEDA "fails to provide for the necessary mechanisms needed to protect taxpayers and ensure federal credit is issued in a transparent and fiscally responsible manner.").

attracting private sector involvement and in maintaining Congressional support for the level of risk CEDA should undertake.

It is also important to recognize the need for subsidy cost determinations to be made quickly enough to facilitate private sector financings. It has become evident through the Title XVII experience that the speed with which the federal agencies go through the subsidy cost determination process does not match the speed with which the private sector researches, designs, and executes financings for energy generation facilities.⁹⁴ The final subsidy cost determination is a crucial component in economics of a given deal, and potential recipients of loan guarantees and other support need to understand the methodology and parameters involved in subsidy cost determination early enough that they can address the economics and proposed structure of their financings with some level of certainty.

These suggested changes of perspective around and reforms to the subsidy cost determination process are not realistic unless OMB and CEDA (whether housed within or outside of DOE) are equipped with the resources to proficiently handle the complex risk analysis involved with emerging technology generation. As mentioned in section III.B *supra*, CEDA and OMB should be able to hire a sufficient amount of expert staff not subject to federal pay scale requirements, and to the extent possible, federal hiring processes that involve long delays. It will not be easy to make CEDA both embrace emerging technology risk and operate efficiently within FCRA's parameters. However, recognizing and attempting to address these tensions from the start will provide CEDA an opportunity to become a long-term institutional presence.

Lastly, although the need for Congress and OMB to embrace this higher level of risk on a project by project basis is necessary to CEDA's success, it is important to avoid overstating the involved risk. While the scale of risk contained in a CEDA focused on emerging technologies may be higher than that built into the federal tax regime supporting mature renewable technologies, CEDA will not be awarding support in an arbitrary manner. Technologies that will qualify for CEDA support will have already emerged from a period of private sector venture or early stage equity support with its accompanying due diligence and evaluation. These technologies will have been proven at some scale, just not at a commercial scale (and sometimes just not at a commercial scale in the U.S.). A successful CEDA depends on Congress and the Executive Branch's recognition and agreement that risk is acceptable in light of the program's goals.

In addition to the need for the government to embrace the level of risk involved with emerging technology support, CEDA cannot be successful in its focus on relatively higher-risk emerging technologies if it is required to be self-sustaining, as is currently proposed in ACES and ACELA.⁹⁵ The portfolio investment approach that goes along with a self-sustaining CEDA, which would require emerging technology projects to be balanced with less risky investments,

94. See *supra* notes 84-86, 89, and 93.

95. S. 1462 § 101; H.R. 2454 § 182. See *supra* section II.C.

runs counter to CEDA's responsibility to invest the capital appropriated to it by Congress in projects based upon their potential to meet the program's legislative priorities. The balanced approach should mean diversification among the types of promising emerging technologies receiving support, and not among the probable percentage risk of default of projects. CEDA's focus on emerging technologies would be diluted by a competing mandate to generate a return on its capital, and would make CEDA risk averse. In order to generate a return, the program would need to support a disproportionate number of low-risk facilities to manage the potential loss of just one higher-risk near commercial technology.

This is not to say that CEDA may not become a self-sustaining program. The Overseas Private Investment Corporation (OPIC), with "programs intended to promote U.S. private investment in less developed countries by mitigating risks, such as political risks . . . through loans and guarantees, insur[ance] against political risk" and various investment funds,⁹⁶ is fully self-funding from its own revenues.⁹⁷ OPIC does not support projects with similar risk profiles as would a CEDA supporting emerging energy technologies (calculated political risk as compared to technology risk), but through good management, it has evolved its programs into a self-sustaining system. However, CEDA should not be structured as self-sustaining from its inception, or else the program will not be able to take the financial risk necessary to make material deployment progress. CEDA should not be required to divert funds that could support technologies through the "valley of death" towards technologies for which private sector support and tax-based government incentives already exist, or else this critical market gap will not be closed, and we will not see a continuing pipeline of new renewable energy technologies.

Somewhat related to a self-sustaining requirement, ACES and ACELA both establish an alternative risk management structure that seems to contemplate credit support not subject to FCRA's OMB determination requirements.⁹⁸ Both proposals include establishment of a Clean Energy Investment Fund, which is to be a revolving fund with loan loss reserves to account for estimated losses.⁹⁹ Since the risk of loss for federal credit support is already accounted for in the OMB-determined subsidy cost process, this language is either redundant or provides an alternative to FCRA's risk management mechanism. ACELA supports this construct in stating that CEDA may not incur potential liability unless an amount equal to the subsidy cost is transferred to the correct credit program account "for activities pursuant to" FCRA *or* "sufficient amounts are reserved within the Fund to account for such liabilities."¹⁰⁰

This alternate risk management process threatens to confuse or even undermine the risk management protections FCRA provides, as CEDA staff or potential recipients may choose to go outside the subsidy cost determination

96. Shayerah Ilias, Congressional Research Service, *The Overseas Private Investment Corporation: Background and Legislative Issues* 1 (Dec. 1, 2009).

97. *Id.* at 5.

98. H.R. 2454 § 187(c); S. 1462 § 106(a)(1)(C).

99. H.R. 2554 § 184; S. 1462 § 103(a)(1).

100. S. 1462 § 107(a)(5)(B)(i)-(ii).

process and make an independent evaluation of what constitutes adequate loan loss reserves. In addition to being illegal under FCRA (which requires that all loans and guarantees, including “any pledge” by the government in a federal credit program, conform to FCRA’s requirements), competing risk management mechanisms would make it difficult to compare various awards of support within CEDA, and lead to potentially unfair treatment of technology risk for reasons other than a good faith attempt at determining risk and greenhouse gas emissions reduction potential. It would also defeat FCRA’s purpose of providing the federal government a mechanism by which to manage federal credit and its associated risk across all government agencies and corporations. FCRA’s risk management protections, while in need of improvement with relation to acceptance of risk, transparency, and cooperation among agencies, provide adequate protection to the federal government for CEDA’s potential defaults.

D. CEDA Should Maintain Congressional Oversight Protections Applicable to all Federal Credit Programs

In addition to the low carbon requirement, focus on emerging technologies and necessary risk management reform, it is also important that CEDA remain subject to the other congressional oversight protections contained in FCRA.¹⁰¹

As mentioned in section III.C, *supra*, section 504(b) of FCRA requires that Congress provide authority via an “appropriations Act” in advance of any federal agency or government corporation’s provision of loan guarantees or other credit support.¹⁰² One of the distinctions between ACES and ACELA is that the latter provides CEDA with an exemption from section 504(b).¹⁰³ The impacts of this 504(b) application to CEDA have been an issue of debate by stakeholders, stemming mostly from the problems experienced by the Title XVII Program with regards to appropriations and ongoing subsidy cost determinations. The authors do not think that CEDA requires an exemption from this standard congressional oversight requirement placed on all federal credit programs in order to operate effectively, and this requirement is especially important when dealing with the risk associated with emerging technologies.

Proponents of an exemption from section 504(b) take the view that that this advance appropriations requirement necessarily mires CEDA down in the political crosswinds of annual appropriations processes, inserting uncertainty

101. 2 U.S.C. §§661-661(f).

102. Specifically, section 504(b) only allows loans and loan guarantees when: “(1) new budget authority to cover their costs is provided in advance in an appropriations Act; (2) a limitation on the use of funds otherwise available for the cost of a direct loan or loan guarantee program has been provided in advance in an appropriations Act; or (3) authority is otherwise provided in appropriations Acts.” FCRA defines “Act” but not “appropriations” and precedent does exist for budget authority being provided in authorizing or enabling statutes. 2 U.S.C. § 504(b). The exemption from section 504(b) is contained in section 103(b) of ACELA, entitled, “Revisions to Loan Guarantee Program Authority.” S. 1462 § 103(b). The changes in this section are intended to apply to the Title XVII program. Although ACELA intends a merger of Title XVII with CEDA, it is not clear from the bill that this exemption would cross over into CEDA’s portfolio. Despite this arguable ambiguity, advocates of the exemption want it to apply to both the Title XVII Program and CEDA, it is assumed as such for purposes of this article.

103. 2 U.S.C. § 504(b).

that risks the program's implementation and continuing efficacy.¹⁰⁴ Although this view finds support in the Title XVII experience, ACELA's direct initial capitalization of \$10 billion would avoid the need for further Congressional approval prior to initiation, and unlike Title XVII, ACELA would not be subject to ongoing annual appropriations review. Allowing this exemption would make CEDA unnecessarily unique among the over fifty federal credit programs that are subject to section 504(b).¹⁰⁵

1. Initial Congressional Authority

One of the problems facing Title XVII was its inability to access initial appropriations, and this problem provides the basis of the argument for exempting CEDA from the section 504(b) appropriations requirement. This problem would not arise under CEDA, however, because both ACELA and ACES provides CEDA with sufficient FCRA authority to begin operations without further congressional action.¹⁰⁶ In ACELA, Congress directs the Secretary of Treasury, upon the satisfaction of certain criteria, to transfer \$10 billion to the Clean Energy Investment Fund established under CEDA "to remain available until expended."¹⁰⁷ The bill then states that "the Fund shall be entitled to receive and shall accept, and shall be used to carry out this subtitle" the amounts in the Fund "without further appropriation."¹⁰⁸ The bill also provides the program with the administrative expenses necessary to initiate CEDA's operations "on the date of enactment,"¹⁰⁹ even in advance of meeting the criteria that will allow for the transfer of the full initial capitalization. Moreover, the bill goes on to make a distinction between CEDA's initial capitalization, appropriated by ACELA, and any additional amounts that may be appropriated in the future, by generically authorizing future appropriations that may be needed "in addition to" the funds already appropriated in ACELA.¹¹⁰ The clear

104. See Peter Behr, *Green Bank Proposals Probe the Hostile Frontier of Politics and Finance*, N.Y. TIMES, Oct. 2, 2009 (quoting Reed Hundt, head of the Coalition for the Green Bank, as stating "it makes far more sense to capitalize the bank once and for all, rather than require annual appropriations, which would leave it 'totally politicized all the time.'").

105. The GAO's FY2011 Budget includes supplemental tables detailing the wide array of federal loan and loan guarantee programs subject to FCRA. See *supra* note 79.

106. Since only ACELA proposes a section 504(b) exemption, this section will not detail the language in ACES. However, both pieces of legislation would provide CEDA with sufficient initial and ongoing authority to avoid the appropriations issues faced by the Title XVII program.

107. S. 1462 § 107(a)(6)(A). The Clean Energy Investment Fund is a revolving Treasury fund established in S. 1462 § 103. Upon enactment, the \$10 billion and funds already appropriated for Title XVII administrative expenses are to be transferred into the Fund. The Fund will also receive any additional amounts that may be appropriated in the future. ACELA did not include a transfer of the funds appropriated under EPAAct 2005 § 1705 of Title XVII, and this is presumably the case because section 1705 was enacted after S. 1462 was drafted.

108. S. 1462 § 107(a)(6)(B). Some discrepancy exists as to whether the initial \$10 billion capitalization constitutes appropriations or mandatory spending, but there seems to be agreement that the language is sufficient to cause the capitalization without further action by the appropriators. Lacking sufficient appropriations expertise, the authors do not take a view on this potentially important distinction, and acknowledge that use of the term "appropriations" in this section encompasses this ambiguity.

109. S. 1462 § 107(a)(4)(B).

110. S.1462 § 107(a)(7).

interpretation of this language is that CEDA does not require further appropriations or authority to start operations.

EPA 2005 did not contain a similar initial authorization for the Title XVII Program. Title XVII states only that “[t]here are authorized to be appropriated such sums as are necessary to provide the cost of guarantees under this title.”¹¹¹ This language necessitates a future appropriation, at least for subsidy costs. Although EPA 2005 also stated that fees collected pursuant to the Title XVII Program will be available for administrative expenses “until expended,” these revenues were not to exist until the Title XVII program got started and began collecting fees.¹¹² EPA 2005 failed to authorize or appropriate any upfront administrative spending to set up the program office, draft regulations, and engage in other preparatory activities.

DOE therefore found itself charged with implementing a loan guarantee program without the authorization to spend any money in the effort.¹¹³ Despite this chicken-and-egg dilemma, DOE did initiate preliminary activities to develop the loan guarantee program, including the establishment of a web site, the development of policies and guidelines for the program, and the issuance of a solicitation for pre-applications to potential loan guarantee recipients.¹¹⁴ To accomplish these activities, DOE transferred employees assigned to other programs to temporary positions with the loan guarantee program.¹¹⁵ This conduct of activities, and the use of other DOE staff time in advance of Title XVII receiving specific appropriations, caused consternation on the part of the GAO and the House Appropriations Subcommittee on Energy and Water Development, compounding the difficulties DOE faced in implementing Title XVII in light of the then Administration’s lack of enthusiasm for the program.¹¹⁶

In addition to these issues, appropriators were concerned about whether the Title XVII program would be governed by adequate regulations, risk protection policies, and management plans.¹¹⁷ Unlike the existing CEDA proposals, EPA 2005 did not require that the Title XVII Program develop criteria or a methodology by which to choose programs worthy of support, did not mandate a Board of Directors or Energy Technology Advisory Committee, did not provide

111. EPA 2005 § 1704(a).

112. *Id.* § 1702(h)(2)(B).

113. See letter from James T. Campbell, Acting Chief Financial Officer, Department of Energy to James C. Cosgrove, Acting Director, Natural Resources and Environment Gen. Accounting Office, Feb. 16, 2007 (in response to a GAO report finding deficiencies with implementation of the Title XVII Program and stating that it was not in a position to complete the “activities that draft GAO report criticizes DOE for not doing” due to a denial of appropriations from the House Energy and Water Development, and Related Agencies Appropriations Subcommittee.) Other legal issues were playing out at this time with regards to whether DOE could spend appropriated funds from other programs on start up of the Title XVII Program. GOV. ACCOUNTABILITY OFFICE, Dep’t of Energy-Title XVII Loan Guarantee Program, B-308715 (Apr. 20, 2007).

114. GOV. ACCOUNTABILITY OFFICE, Dep’t of Energy-Title XVII Loan Guarantee Program, B-308715 (Apr. 20, 2007).

115. *Id.*

116. *Id.*

117. See *supra* note 113 (regarding DOE’s progress with Title XVII program. The House Subcommittee that rejected the appropriations transfer request was the Energy and Water Development, and Related Agencies Appropriations Subcommittee).

for critical pay positions to insure an adequate number of staff with sufficient expertise in energy finance, and did not address the issue of risk management. From the GAO's perspective, it was for all of these reasons that the House Appropriations Subcommittee denied the Agency's initial appropriations request in July 2006.¹¹⁸

These issues played out for some time, and Title XVII did not receive initial appropriations until February of 2007.¹¹⁹ Supporters of an effective CEDA program are right to look back on Title XVII's initial struggle to fund its program as an issue that should be avoided in CEDA's design and implementation. Fortunately, CEDA's drafting does avoid subjecting the program to similar delays. One may reasonably suppose that CEDA's drafters were specifically concerned with avoiding this Title XVII experience when drafting CEDA in a significantly more comprehensive manner.

2. On-Going Congressional Review

Section 504(b) not only requires initial Congressional authority, but also necessitates renewed authority if an agency's federal credit appropriations or budget authority is limited by time or amount.¹²⁰ Conceptually, this is a sensible congressional oversight requirement – agencies providing financing support are required to check in with Congress when they run out of authority, so that the legislative branch can provide a check by assessing the status and efficacy of any given executive branch program providing credit support with federal dollars.

Supporters of a section 504(b) exemption worry that CEDA will have to go back to Congress each year and face exposure to additional restrictions and requirements from appropriators, as was the case with the Title XVII program. This view misinterprets FCRA's requirement, which does not mandate that CEDA's authority be renewed on an annual basis. Neither FCRA nor any other federal statute requires annual authorizations for a specific program. As mentioned above, both the House and Senate CEDA proposals give the entity indefinite authority to spend the initial capitalization, along with fees earned.¹²¹ This understanding makes the requirement that CEDA go back to Congress once the significant initial capitalization is depleted less onerous.¹²² This initial spend down could take several years, during which CEDA would not come under the lens of the appropriators.

118. GEN. ACCOUNTING OFFICE, *Dep't of Energy: Key Steps Needed to Help Ensure the Success of the New Loan Guarantee Program for Innovative Technologies by Better Managing Its Financial Risk*, GAO-077-339R at 1 (Feb. 28, 2007).

119. FY2008 Continuing Resolution.

120. 2 U.S.C. § 504(b).

121. H.R. 2454; S. 1462; *see supra* notes 107-110.

122. Based on conversations with several stakeholders and federal staff involved in the appropriations process, the authors understand that there is a view that if CEDA remains within DOE, DOE will go back to Congress annually to ask for renewed appropriations authority for administrative expenses. There is no requirement in the law that this is true specifically with respect to CEDA, and ACES and ACELA authorization of administrative expenses from the program's inception should be sufficient to avoid placing CEDA's administrative expense authority at risk due to annual DOE appropriations requests.

The Title XVII Program did go back to Congress for annual appropriations review, but the impetus came from Title XVII itself, not from FCRA. EAct 2005 states that fees collected under the Title XVII program are available until expended, “subject to such other conditions as are contained in annual appropriations Acts.”¹²³ This subjection means that revenues to the program will be put through annual Congressional consideration, and suggests that annual appropriations review is to be part of Title XVII’s overall funding structure in a manner not contemplated for CEDA.

During each appropriations cycle after the Title XVII Program’s initial funding, the House Appropriations Committee specified conditions and placed some restrictions on how the Program should move forward. These restrictions, which imposed uncertainty and limitations in a manner that hobbled the Program’s progress, should raise concern but are not likely relevant to CEDA. This difference stems from the fact that Title XVII’s enabling legislation contained several deficiencies that made it reasonable for the House Appropriations Committee to play this continued oversight role in insuring the program was properly designed. Appendix A to this article contains a chart with each of the provisos the House Appropriations Committee placed on Title XVII and provides a comparison to CEDA’s treatment of the same or similar issues.

When the Title XVII Program did receive its first appropriations of \$7 million for administrative expenses and authority to issue guarantees to \$4 billion in loan volume, the House Appropriations Committee made the Program’s ability to issue guarantees contingent on the completion of final regulations and imposed on the Program independent audit and annual reporting requirements.¹²⁴ In the annual appropriations process for the next three fiscal years, the House Appropriations Committee continued to make changes to the Title XVII program, in some cases increasing the total loan volume that could be supported with Title XVII loan guarantees, but in some cases placing time restrictions on when certain money could be spent and removing the ability of DOE to pay for the subsidy costs of loan guarantees.¹²⁵ In light of the Program’s failure to issue final regulations until two years after its implementation, it seems sensible from a taxpayer protection and accountability perspective that the House Appropriations Committee stayed involved.

Even if CEDA was subjected to annual appropriations, it is evident by reviewing each of the provisos, the appropriators placed on the Title XVII Program that ACES and ACELA have already addressed most of the issues with which the Appropriations Committee found concern.¹²⁶ The features of ACES and ACELA, as compared to the Title XVII Program, demonstrate that CEDA will not be subject to the hampering delays and restrictions experienced by the

123. EAct 2005 § 16512(f)(2)(B).

124. FY2007 Resolution, Pub. L. No. 110-5 (Feb. 15, 2007).

125. Omnibus Appropriations Act, 2009, H.R. 1105, Pub. L. No. 111-8 (Mar. 11, 2009). This subsidy cost authority was reinstated when Congress passed ARRA in 2009 and provided the program with \$4 billion to cover subsidy costs. American Recovery and Reinvestment Act of 2009, H.R. 1, Pub. L. No. 111-5 (Feb. 17, 2009).

126. See Appendix A.

Title XVII Program. As such, CEDA does not merit a unique exemption from section 504(b).

This close look at the somewhat esoteric requirements of FCRA demonstrate that CEDA can and should operate within section 504(b)'s parameters to insure adequate Congressional oversight and support.

IV. CONCLUSION

CEDA has the potential to facilitate great strides in the development of Clean Energy Technologies essential as part of the transition to a low-carbon economy. To do so, it must be clear in its mission to target those technologies facing the “valley of death” using flexible instruments that address the gaps in the private market while not stifling private initiative. It also must be clear in its scope that CEDA cannot support anything other than carbon-neutral or carbon-reducing technologies. From the institutional design point of view, to be effective CEDA must incorporate the lessons learned from prior and existing programs, first and foremost by reform of the credit subsidy cost determination process. However, while efficient implementation is imperative to CEDA's success, we believe this is a separate issue from the applicability of effective taxpayer protections. Like all federal credit programs, CEDA should be subject to FCRA, to ensure the proper use of its resources in accordance with its congressional mandate, and to not endanger public support of renewable energy deployment initiatives, so that they may continue for as long as is necessary to achieve climate change mitigation goals.

V. APPENDIX

Title XVII Appropriations Provisos Title XVII CEDA Observations Comparison		
FY2007 Continuing Resolution, Pub. L. No. 110-5 (Feb. 15, 2007)		
\$7m in administrative expense appropriations.	Although Title XVII was enacted in December 2005, it did not receive administrative appropriations until February 2007.	Both ACELA and ACES include an initial appropriation for CEDA's administrative expenses.
Budget authority for guarantees of \$4b principal.	Although Title XVII was enacted in December 2005, it did not receive budget authority until February 2007.	Both ACELA and ACES include initial funding for CEDA.

Subsidy costs payments collected under the program are available for further subsidy cost payments, to be available until expended.	Although these revenues were pre-approved for use without a deadline, Title XVII did not collect any subsidy cost payments for several years.	Both ACELA and ACES authorize use of subsidy cost revenues for future subsidy cost payments, available until expended.
Other fees collected during FY 2007 are credited as offsetting collections to the \$7m administrative expense appropriation, and amounts collected above the \$7m shall not be available until appropriated.		Off-setting fees not an issue; excess of offsetting fees would not require further appropriations under CEDA since both ACELA and ACES authorizes administrative expenses to be available until expended.
No guarantees may be made until final regulations are issued.	Congress placed this requirement on the program after it had existed for over a year without regulations in place.	Both ACELA and ACES provide CEDA with the necessary upfront administrative appropriations to allow for the development of regulations without delay.
Places an independent audit requirement on the Program and requires that the results of the annual Comptroller General review of the program be provided to the Appropriations Sub-Committee.	Congress placed this requirement on the program after it had existed for over a year without regulations in place.	Both ACELA and ACES require an annual independent audit and Comptroller General audit so there is certainty on this front from CEDA's inception.
Requires that an annual report of the program's activities be submitted to the Appropriations Sub-Committee.	Congress placed this requirement on the program after it had existed for over a year without regulations in place.	Both ACELA and ACES require a bi-annual report to Congress so there is certainty on this front from CEDA's inception.

FY2008 Appropriations		
FY2008 Continuing Resolutions Consolidated, Pub. L. No. 110-161 (Dec. 26 2007)		
Subsidy cost collections are authorized for expenditure only until Sept 30, 2009.	This is a change to a year earlier when these revenues were authorized without a date limitation, after no subsidy cost revenues were collected in FY2007. At this point, Title XVII had just issued initial regulations for the program's implementation, on October 23, 2007.	Both ACELA and ACES make subsidy cost revenues available, by statute, for future use until expended.
No solicitations can be made until DOE submits a loan guarantee program implementation plan to the Appropriations Sub-Committee.	This request is based on existing deficiencies in Title XVII's authorizing legislation.	Both ACELA and ACES provide detailed guidelines on the purpose and goals for CEDA.
\$5.5m in appropriations for administrative expenses to be available until expended.	Annual appropriations not required.	Both ACELA and ACES include an ongoing appropriation for CEDA's administrative expenses.
Fees collected (other than subsidy cost payments) should offset the administrative expenses appropriations so that in FY08 approximately no money has to come out of the general fund.		Off-setting fees requirement is not an issue.

FY2009 Appropriations		
Omnibus Appropriations Act, 2009, H.R. 1105, Pub. L. No. 111-8 (Mar. 11, 2009)		
Budget authority for guarantees	This appropriations	Additional budget

of \$47b principal, to be available until expended, with \$18.5b of that authority for nuclear power facilities; in addition to amounts available in FY2007 Continuing Resolution.	cap increase provided Title XVII with additional lending authority.	authority is not required for CEDA, but an appropriations cap could be placed on the overall limit of principal to be supported.
No appropriations are available to pay subsidy costs.	This restriction meant that all recipients of Title XVII loan guarantees should pay for their own subsidy costs (and was replaced in section 1705 with appropriations for subsidy cost in ARRA).	Both ACES and ACELA permit CEDA to pay the subsidy costs for recipients of CEDA support.
\$19.88m in administrative expenses appropriations are available until expended; up to that much of fees (other than subsidy costs) collected shall offset this appropriation so that the final result of appropriations for FY2009 from general fund actually estimated at \$0.		Off-setting fees requirement is not an issue.
None of the funds appropriated are available towards issuance of a solicitation until an implementation plan is submitted to the House Appropriations Committee and the Senate.	3 years after Title XVII's enactment, the Appropriators asked DOE to "explain the justification of the selected risk assumptions used in the development of the credit risk subsidy model, as well as the priority weighting of the criteria." ¹²⁷	CEDA provides more detailed goals and criteria that the Administrator must follow when implementing the program, and these considerations can be considered from its inception instead of three years later.

127. House Appropriations Committee Print, Omnibus Appropriations Act 2009, H.R. 1105, Pub. L. No. 111-8, Division C.

None of the funds may be used to facilitate third-party financing of federal services of facilities.	CBO surmised that DOE planned to use some of the Title XVII funds to facilitate third-party financing of federal services and facilities and the appropriators included this restriction to keep the score of the bill and costs down.	CEDA's drafters need to contemplate whether the program may provide support that facilitates third-party financing, and factor this activity into overall cost, budgeting and accounting assessments.
No guarantee may be issued unless OMB certifies in advance that the guarantee complies with the provisions under this appropriations title.	This certification was likely required due to all of the Title XVII implementation concerns that lead to the provisos in the first place.	This requirement should not be placed on CEDA in light of its more comprehensive upfront drafting and implementation plan, and even if it was so placed, it should not serve as a barrier to CEDA's efficacy so long as the process is agreed upon between CEDA and OMB in advance.

American Recovery and Reinvestment Act of 2009, H.R. 1, Pub. L. No. 111-5 (Feb. 17, 2009) (ARRA)		
\$6b appropriated for subsidy costs under Section 1705, a new section created under ARRA to support conventional clean energy technologies, available until expended; \$25m of which is available for administrative expenses, and \$10m of which is available for advanced vehicles manufacturing loan program.	This provision allowed DOE to start covering the subsidy costs involved with many awards under Title XVII.	CEDA provides initial capitalization for subsidy costs so does not need any additional appropriations to start covering these costs.

FY2010 Appropriations		
FY2010 Continuing Resolution, H.R. 3183, Title III, Pub. L. No. 111-85 (Oct. 28, 2009)		
<p>\$43m in administrative expenses appropriations to be available until expended; up to that much of fees (other than subsidy cost payments) collected shall offset this appropriation so that the final appropriations for FY2009 from general fund actually estimated at \$0. Any excess of that amount collected in fees will not available until appropriated.</p>		<p>Off-setting fees requirement is not an issue. Further, both ACELA and ACES include an ongoing appropriation for CEDA's administrative expenses.</p>