

**The Clean Energy Deployment Administration (CEDA):  
Key aspects and improvements to the Department of Energy (DOE) Loan Guarantee Programs**

**Executive Summary**

The Title XVII DOE Loan Program (“the Loan Program”) first established in the 2005 Energy Bill, has filled an important role as one of the few federal programs aimed to address the Commercialization Gap--the persistent financing challenge of bringing breakthrough energy technologies to market at scale. However, as Section 1705 Recovery Act funding sunsets this September and fiscal pressures mount in Washington, the future of the Loan Program<sup>1</sup> is uncertain.

This paper presents how the establishment of new independent administration within the DOE, the Clean Energy Deployment Administration (CEDA), would take over the existing Loan Program--which has demonstrated success over the past few years--and improve upon it. CEDA will have structural advantages over the Loan Program, including an independent structure, a streamlined Executive Office approval process, and the ability to administer a range of financial products including but not limited to loans and loan guarantees. These improvements will drive the financing of energy technology commercialization more efficiently and at a limited expense to the taxpayer. Importantly, CEDA’s innovative, self-funding capabilities will enable the program to be capitalized only once. In light of budgetary constraints, achieving taxpayer “bang for the buck” is critical.

**Addressing the Commercialization Gap – The DOE Loan Program**

The commercialization stage is often the most financially challenging for energy projects or technologies. Significant capital is often needed to move technologies from pilot testing to deployment—capital that does not fit the risk/return profiles of traditional private sector capital sources. During the commercialization stage, technologies must demonstrate technical, operational, commercial and financial viability at scale. In the energy sector, demonstrating this viability often requires significant capital spending – often hundreds of millions of dollars – that is generally beyond the capacity of venture capital investors. At the same time, the commercialization risk is too high for project lenders and equity providers. As such, these technologies and projects are stuck in the “Commercialization Gap”.

To help bridge the Commercialization Gap, the U.S. government can lower the financial risks the private sector faces in investing in the deployment of breakthrough technologies. The Loan Program has done just this, by providing credit supports to improve the risk/return profile for these first-commercial, capital-intensive technologies and enable private sector capital to move off the sidelines. Loan guarantees have proven essential to technologies including promising large-scale solar, wind, geothermal, and energy storage technologies.

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<sup>1</sup> The DOE Loan Program Office administers three separate programs: Title XVII Section 1703 and Section 1705 loan guarantee programs, and the Advanced Technology Vehicles Manufacturing (ATVM) loan program. The 1703 program, created as part of the Energy Policy Act of 2005, supports the deployment of innovative technologies that avoid, reduce, or sequester greenhouse gas emissions. The Section 1705 program was a temporary program created as part of the American Recovery and Reinvestment Act of 2009 (ARRA). Under Section 1705 of the 2009 Recovery Act, the federal government can cover the credit subsidy costs for renewable or transmission projects under the 1703 or FIPP programs. The Advanced Technology Vehicles Manufacturing (ATVM) loan program was created by the 2007 Energy Bill and funded by the TARP legislation.

The following section describes the demand for the Loan Program, its track record, and successes to date:

- **Market Demand** - The Loan Program has received hundreds of applications for renewable energy projects since 2009. DOE recently sent letters to sponsors of approximately 50 projects delaying loan processing until program gets more funding.
- **Deal Volume** - Since March 2009, DOE has issued conditional commitments for nearly \$30 billion in loans or loan guarantees to 29 projects, 17 of which have achieved financial close.<sup>2</sup> 22 of these conditional commitments were made under the 1705 program<sup>3</sup>. The projects span technologies such as wind, solar, advanced biofuels, geothermal, transmission, battery storage, and nuclear.
- **Job Creation**– Project sponsors estimate the 29 projects will create or save over 61,000 jobs.<sup>4</sup>

**Credit Quality** – The credit worthiness of the Section 1705 loan portfolio has been high. One of the reasons is that DOE has generally focused on loans to electricity generating projects with long term offtake agreements. Within each loan, DOE has taken a number of steps to ensure conservative capital structures, including high interest coverage ratios and well-funded reserve accounts. Ensuring credit quality for manufacturing operations is more challenging, given that there are no long-term offtake agreements. DOE has closed two solar manufacturing plant loans and two energy storage manufacturing plant loans.

### **Challenges of the Loan Program**

While the Loan Program has made significant progress, it has been hampered by a number of structural challenges, including its extensive multi-agency review process and the limitation on financial products it can administer.

- **Lengthy and unpredictable review process:** While it is understandable that checks and balances should be embedded in the loan approval process, the DOE Loan Program has suffered from a lengthy and unpredictable review process leading to significant delays in funding awards. Project sponsors face a “black box” process with little insight into evaluation criteria or the timing of decisions amongst the various offices, such as the Department of Treasury and the Office of Management and Budget, which are mandated through legislation to have a role in assigning credit risk and/or approving loans and loan guarantees. In some cases, concerns such as credit quality or sponsor return on equity emerge only at the end of the review process, with little predictability for the project sponsor and its private financing sources.
- **Limited financial tools:** The DOE is limited in the types of products it can provide. Under current law, the program can either provide a direct loan to a particular project, or it can provide a guarantee for a bank loan. The ability to use other project finance tools, however, could significantly improve the effectiveness of the program without increasing the cost or reducing its

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<sup>2</sup> Statement of Jonathan Silver, Executive Director of the Loan Programs Office, Senate Energy testimony on CEDA May 3, 2011.

<sup>3</sup> Includes renewable and transmissions projects and manufacturing plants – under the both the 1703 and FIPP programs – where the government funds the sponsor credit subsidy costs.

<sup>4</sup> Statement of Jonathan Silver May 3, 2011.

effectiveness. For example, banks will typically sell a letter of credit in conjunction with a loan to provide security for a project's power purchase agreement (PPA). Under the loan program, DOE cannot sell a letter of credit and sponsors must separately fund the obligation. This constraint reduces the credit-worthiness of the project: were the project to default and DOE forced to take it over, the government would have no immediate mechanism to provide security for the PPA, one of the project's most valuable assets.

- **Lack of alignment with “Commercialization Gap” projects sponsors:** The limited product offering also means that the Loan Program can only work with a subset of projects - generally those (as mentioned above ) that have long-term PPAs. As a debt provider with a fixed return, the government has little incentive to take on projects that have neither PPAs nor offer any monetary upside. However, those higher risk projects (for example, manufacturing facilities or first-commercial projects) may represent significant technological breakthroughs. If the government could provide equity or quasi-equity instruments to projects, it could not only help these projects advance, it could also benefit alongside the private sponsor at an appropriate risk/return and build a revenue stream which could fund future credit subsidy costs (currently lacking in the 1703 Program).

### **How CEDA would address the challenges of and improve upon the Loan Program**

The original intent of the Section 1703 Program was to facilitate financing for commercial projects which reduce pollutants or greenhouse gas emissions while employing advanced technologies. As designed, CEDA would carry out the intent of the original Section 1703 program, providing various types of credit supports to stimulate private sector investment and help bridge the Commercialization Gap. Importantly, in today's state of fiscal austerity and budgetary concerns, CEDA will give taxpayers “bang for the buck” as CEDA's structure and additional funding mechanisms will enable the program to be self-sustaining over time with only a one-time capitalization of \$10bn needed.

The following key aspects of CEDA demonstrate how this new agency will improve upon the Loan Program in terms of the review process, CEDA's self-funding capabilities, products offered, and agency structure:

#### ***Executive Office Review Process improvements***

CEDA would be a separate administration within DOE, providing CEDA the independence necessary for a streamlined review process within the Executive Branch. Importantly, CEDA's independence will improve upon the Loan Program's lengthy Executive Office review process in the following aspects:

- **CEDA's portfolio approach.** Currently, Loan Program applicants are reviewed on a case by case basis by OMB and Treasury. Due to the limitations of the legislation, the Loan Program cannot currently bundle a portfolio of projects for OMB review. CEDA, as drafted, would allow for a portfolio review of projects by OMB, giving CEDA more flexibility to manage at the top level a range of risk/return profiles amongst various technologies and projects and providing for a more streamlined approval process. This approach depoliticizes the process for individual projects and gives CEDA more flexibility and authority to manage credit risks at the portfolio level.

- **Ability to fund credit subsidy costs.** CEDA’s self-funding mechanisms (described below) would provide for the buildup of its own loan reserve, allowing CEDA to manage some or all of its own liabilities internally. CEDA will therefore rely less on budgetary outlays for covering credit subsidy costs. In other words, CEDA will not require appropriations to set a loan cap; the program could cover subsidy costs through fees generated by CEDA programs. This self-funding mechanism is similar to that of the Overseas Private Investment Corporation (OPIC) Fund Program, which self-funds its loan guarantees credit subsidy costs through fee-generating revenues and investment income.<sup>5</sup>
- **Streamlining process to 180 days.** CEDA calls for a loan review approval process to be completed within six months. This provision would represent an improvement over the current loan program, which – partly due to the inter-agency review process – has typically taken longer than six months.

***Funding improvements: ability to self-fund***

The Alternative Fee Arrangements Section in CEDA Section 9(c)(4) allows CEDA to benefit from profit participation, contingent fees, warrants, and other revenue-generating fees to cover CEDA administrative expenses and a loan reserve.

- **Reduction of dependence on budgetary outlays.** The DOE programs have been limited in their ability to support innovative technologies given that 1703 projects have had to self-fund their credit subsidy costs.<sup>6</sup> CEDA’s flexible alternative fee mechanisms will allow CEDA to take equity or convertible debt stakes in lieu of collecting credit subsidy costs. CEDA will in part be able to cover these exposures through an internal CEDA loan reserve built up through revenue-generating fees, allowing the organization to scale independently from budgetary constraints. This is possible through language in CEDA legislation which allows CEDA’s internal loan reserve to be sufficient to satisfy the requirements of Section 504(b) of FCRA without further Congressional action.<sup>7</sup> CEDA is subject to FCRA and the subsidy cost estimates are done according to statute.
- **CEDA to eventually self-fund.** The alternative fees which would allow for convertible debt as well as equity stakes allowing the organization to scale independently from budgetary constraints.

***Additional products beyond loans and loan guarantees***

- **Ability for the government to administer a range of financial products across the capital structure, which help to ensure CEDA’s target focus--breakthrough technologies--are funded.** Through quasi-equity products, such as convertible debt, and other products which will be tailored to meet funding gaps as the market evolves over time, CEDA will be able to target the parts of the capital structure which lack private capital. Additionally, CEDA’s ability to receive warrants (e.g. equity upside) will provide the entity incentive to administer funding to projects

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<sup>6</sup> The Section 1705 Program, allowed for credit subsidy costs to be paid by funds appropriated by Congress, solving the “self pay” issue temporarily for 1703 projects that then qualified under the 1705 Program.

<sup>7</sup> CEDA Section 9(5). In essence, CEDA, through its appropriated pool, will set aside subsidy cost payments. Once a deal is completed, CEDA could replenish and/or increase the size of the loan fund with the proceeds from an equity stake or a contingent fee.

and companies that truly fit into the Commercialization Gap, which by definition have a higher risk/return profile than projects that otherwise could receive private debt financing.

- This is an important distinction compared to the FIPP Program, which, in contrast to Section 1703 or ATVM, was designed to help creditworthy projects that had difficulty securing financing in a tight credit market (and due to their higher level of creditworthiness, demanded lower credit subsidy costs). Furthermore, with government as a debt provider with a fixed return, there is no monetary upside for the government to fill the financing gap where it is needed most, on higher-risk projects which require an innovative approach to financing. See Appendix 4 for a list of potential products.

#### ***CEDA Structure and Culture as an innovative agency***

- **The creation of CEDA allows for a “fresh” start and a new culture of innovative financing within DOE.** Given the challenges of the interagency process, it is viewed that a new Administration with an Independent Board and Director will give CEDA credibility and instill a culture that represents the level of innovation necessary for CEDA’s mandate.
- **One-time capitalization will incentivize CEDA and its staff to manage resources efficiently.** In contrast to most government programs which receive yearly appropriations, CEDA as designed, would more efficiently manage taxpayer dollars as it would aim to be self sufficient through generation of fees and return on capital employed. CEDA would not require any other government appropriation other than its initial capitalization.
- **Ability to hire staff outside typical government processes and at Executive Schedule pay rates.** While many highly qualified individuals have been attracted to staff the Loan Program, CEDA’s flexible hiring capabilities will allow the organization to do even more to attract staff from outside the government. This expertise will be needed as CEDA creates new products and deal structures necessary for this new agency.

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#### **ABOUT US PREF**

The objective of the US Partnership for Renewable Energy Finance (US PREF) is to unlock capital flows to new, large-scale and distributed renewable energy projects in the United States. To achieve this objective, a balanced and credible group of highly experienced renewable energy financiers from financial institutions, investors, professional services firms, utilities and others have convened as US PREF. US PREF is a program of the American Council On Renewable Energy (ACORE), a Washington, DC - based 501 (c)(3) non-profit organization whose mission is to bring renewable energy into the mainstream of the US economy and lifestyle through research, education, convening, and communications.

## Appendix 1: 1705 Funded Loans

Summary of 1705 Loans Made as of June 28, 2011

Company	Technology	Loan Amount (\$ millions)	State Located	Loan Status	Major Contracts / Status	Jobs (construction/operation)
Abengoa Solana Project	Concentrating Solar w/ Storage	1,450	AZ	Closed	▪ Offtake with Arizona public service	1600 / 60
Abound Solar	Solar Manufacturing	400	IN	Closed	▪ Under construction ▪ Has raised \$260 million in VC funding	400 / 1200
AES Corporation	Energy Storage	17	NY	Closed	▪ Project partly online and providing frequency regulation	30 / 5
Beacon Power Corporation	Energy Storage	43	NY	Closed	▪ Project online and providing frequency regulation	40 / 20
BrightSource Energy, Inc.	Concentrating Solar	1,400	CA	Closed	▪ Offtake with PG&E and SCE ▪ EPC agreement with Bechtel	1000 / 86
Caithness Shepherds Flat*	Geothermal	1,300	OR	Closed	▪ Under construction ▪ Offtake with SCE ▪ EPC and O&M agreement with GE ▪ Under construction - will be largest wind facility in world	400 / 35
Kahuku Wind Power, LLC.	Wind w/ Storage	117	HI	Closed	▪ Project online ▪ Offtake with Hawaiian Electric	200 / 10
LS Power	Transmission	350	NV	Closed	▪ Under construction	400 / 15
Nevada Geothermal*	Geothermal	79	NV	Closed	▪ Project online ▪ Offtake with NV Energy	200 / 14
Solyndra Inc.	Solar Manufacturing	535	CA	Closed	▪ Has raised approximately \$1 billion in capital in addition to DOE loan	3000 / 1000
US Geothermal, Inc.	Geothermal	102	OR	Closed	▪ Offtake with Idaho Power ▪ Under construction	150 / 10
1366 Technologies	Silicon Wafer Manufacturing	150	MA	Cond. Com.		50 / 70
Abengoa Mojave	Concentrating Solar	1,200	CA	Cond. Com.	▪ Power purchase agreement with PG&E	830 / 70
Calisolar Silicon Manufacturing		275	OH	Cond. Com.		1000 / 1100
Cogentrix	Concentrating Solar PV	90	CO	Cond. Com.	▪ Offtake with Public Service of Colorado	75 / 10
Diamond Green Diesel	Renewable Diesel	241	LA	Cond. Com.	▪ Plant will be now be funded by Valero - announced in June it is pulling out of loan program	700 / 63
Fotowatio Renewable Ventures*	Solar PV	46	NV	Cond. Com.	▪ Offtake with Nevada Power Company	250
Granite Reliable*	Wind	169	NH	Cond. Com.	▪ Offtake with Central Vermont Public Service and Green Mountain Power	198 / 6
Nextera Genesis*	Concentrating Solar	681	CA	Cond. Com.	▪ Offtake with PG&E	800 / 47
Nordic Windpower USA, Inc.	Wind Manufacturing	16	ID	Cond. Com.	▪ No recent news	75
NRG / First Solar Agua Caliente	Solar PV	967	AZ	Cond. Com.	▪ Offtake with PG&E	400 / 10
NRG / ProLogis Project Amp*	Distributed Solar PV	1,400	28 states	Cond. Com.	▪ Up to 733 MW of distributed solar ▪ Each project will have offtake	Over 1000
NRG / SunPower California Valley Solar Ranch	Solar PV	1,187	CA	Cond. Com.	▪ Offtake with PG&E	250 / 15
Ormat Nevada*	Geothermal	350	NV	Cond. Com.	▪ Offtake with Nevada Power Company ▪ Project under construction	330 / 65
Record Hill Wind Project	Wind	102	ME	Cond. Com.	▪ Equity from Yale University Endowment	200 / 8
Sempra Mesquite Solar One	Solar PV	150	CA	Cond. Com.	▪ Offtake with PG&E	300 / 7
Solar Reserve	Concentrating Solar	734	NV	Cond. Com.	▪ Offtake with NV Energy	600 / 45
Solar Trust of America*	Concentrating Solar	2,105	CA	Cond. Com.	▪ Offtake with SCE	1500 / 80
SoloPower	Solar Manufacturing	197	OR	Cond. Com.	▪ Has raised \$250 million in VC funding	270 / 500

Appendix 2: 1703 Loans (through June 15, 2011)

Company	Technology	Loan Amount	State Located	Loan Status	Major Contracts / Status	Jobs (construction/operation)
Areva	Front-End Nuclear	\$2 billion	ID	Cond. Com.	? Awaiting NRC license before loan can close	1000 / 310
Georgia Power Co.	Nuclear Generation	\$8.33 billion	GA	Cond. Com.	? Awaiting NRC license before loan can close	3500 / 800
Red River Env. Products	Energy Efficiency	\$245 million	CO	Cond. Com.	? No recent news on status	500 / 70
Sage Electrochromics	Energy Efficiency	\$72 million	MN	Cond. Com.	? No recent news on status	210/ 160

Appendix 3: ATVM Loans (through June 15, 2011)

Company	Technology	Loan Amount	State Located	Loan Status	Major Contracts / Status	Jobs
Fisker Automotive	Plug-In hybrid vehicle manufacturing	\$529 million	DE	Closed	<ul style="list-style-type: none"> <li>Has raised over \$500 million in private capital</li> <li>Vehicle launch in July 2011</li> </ul>	2000
Ford Motor Co.	Fuel efficient vehicles	\$5.9 billion	MI	Closed	<ul style="list-style-type: none"> <li>Part of Ford's overall energy efficient vehicle strategy</li> </ul>	33000
Nissan North America	Electric vehicle manufacturing	\$1.4 billion	TN	Closed	<ul style="list-style-type: none"> <li>Loan for production of all-electric Nissan Leaf</li> <li>Nissan predicts sales of 10,000 in 2011</li> </ul>	1300
Tesla Motors	Electric vehicle manufacturing	\$465 million	CA	Closed	<ul style="list-style-type: none"> <li>Model S roll-out scheduled for 2012</li> </ul>	1500
The Vehicle Production Group	Natural gas vehicle manufacturing	\$50 million	FL	Closed	<ul style="list-style-type: none"> <li>First purpose built handicapped accessible van</li> <li>Launched in spring 2011</li> </ul>	140

#### Appendix 4: Select examples of potential CEDA products

Product	Description	Target tech/projects	Benefits	Drawbacks/Challenges
CEDA Loan Guarantees/ loan fund	<ul style="list-style-type: none"> <li>• Similar direct loan or loan guarantee product as current loan program</li> <li>• CEDA awards projects/ companies public sector loans/loan guarantees competitively</li> </ul>	<ul style="list-style-type: none"> <li>• Innovative technologies</li> <li>• Mature technologies (in certain cases)</li> </ul>	<ul style="list-style-type: none"> <li>• New CEDA administration without the bureaucratic challenges could streamline process and tailor loan products to specific technology solutions efficiently</li> <li>• CEDA staff with sophisticated finance/technology skill sets will have capabilities to structure and administer appropriate products</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for crowding out private debt capital; only would be appropriate when debt capital is scarce/insufficient</li> <li>• Lessons learned from 1703/1705:</li> <li>• Long lead times for evaluation and approval in interagency process</li> <li>• Requires transparent interagency approval criteria</li> </ul>
Letters of Credit	<ul style="list-style-type: none"> <li>• CEDA would provide letters of credit to support important project assets (eg, PPA)</li> <li>• Typically part of a project finance structure</li> </ul>	<ul style="list-style-type: none"> <li>• Projects receiving a loan or loan guarantee, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>• Would provide CEDA with collateral for all project assets</li> <li>• Sponsors would not have to find means of providing asset security outside of CEDA project structure</li> <li>• Could generate additional fees for CEDA</li> </ul>	<ul style="list-style-type: none"> <li>• A new product that CEDA would need to learn how to administer and price correctly</li> </ul>
Interest rate hedge instruments	<ul style="list-style-type: none"> <li>• Project loans with long draw down periods are subject to interest rate risk (each draw will have a different interest rate based on prevailing treasury rates)</li> <li>• CEDA would provide interest rate hedges in order for sponsor to lock in rate</li> </ul>	<ul style="list-style-type: none"> <li>• Projects receiving a loan or loan guarantee with long construction periods</li> </ul>	<ul style="list-style-type: none"> <li>• Would allow CEDA to lock in interest coverage ratios at loan close</li> <li>• Would allow sponsor to lock in interest rates in order to reduce return volatility</li> <li>• Under loan program currently, it is difficult for project sponsors to purchase hedges from banks because DOE cannot cede any project collateral</li> <li>• Could generate additional fees for CEDA</li> </ul>	<ul style="list-style-type: none"> <li>• A new product that CEDA would need to learn how to administer and price correctly</li> </ul>
Subordinated loans /loan fund	<ul style="list-style-type: none"> <li>• Provide direct mezzanine loans to projects to fill gap between debt and equity</li> </ul>	<ul style="list-style-type: none"> <li>• Innovative technologies (some cases)</li> </ul>	<ul style="list-style-type: none"> <li>• Mezzanine debt provides a larger cushion for equity investors; incentivizes equity investment in projects that lack significant senior debt leverage</li> <li>• Lowers the cost of financing</li> </ul>	<ul style="list-style-type: none"> <li>• Would need to create specific underwriting standards for specific technologies based on underlying risk of each technology</li> <li>• Provides for substantial equity cushion to mitigate federal government exposure to first loss</li> <li>• Provides additional capital cushion for senior lenders who are exceptionally risk adverse</li> </ul>

#### Appendix 4: Select examples of potential CEDA products (cont.)

Product	Description	Target tech/ projects	Benefits	Drawbacks/Challenges
Preferred equity / Warrants / Convertible Debt	<ul style="list-style-type: none"> <li>A range of equity products that would allow CEDA to benefit from project upside or, in some cases, company upside</li> </ul>	<ul style="list-style-type: none"> <li>Innovative technologies</li> </ul>	<ul style="list-style-type: none"> <li>Provides a structure for CEDA to support innovative projects/technologies that do not have a PPA</li> <li>Allows CEDA to benefit from successful investments</li> </ul>	<ul style="list-style-type: none"> <li>Requires a higher risk/return profile than current loan program</li> </ul>
CEDA public/private equity fund	<ul style="list-style-type: none"> <li>Private sector equity funds with market returns underwritten by capped government returns</li> <li>CEDA awards private funds public capital on a competitive basis</li> </ul>	<ul style="list-style-type: none"> <li>Innovative technologies</li> </ul>	<ul style="list-style-type: none"> <li>Investors (public and private) invest at the corporate level.</li> <li>Royalties/warranties/equity allow for upside beyond infrastructure returns</li> <li>Efficient use of private sector know-how and investor expertise</li> </ul>	<ul style="list-style-type: none"> <li>Mission drift: private investors will seek the highest return. This bias could concentrate investments in certain technologies, regions or in later investment stages</li> <li>Crowd out private equity capital if investments are made in proven technologies</li> <li>GP reverse selection problem</li> <li>Costs</li> </ul>
Efficacy insurance	<ul style="list-style-type: none"> <li>Targeted risk mitigation: protects against a technology that underperforms; nuclear industry provides model</li> </ul>	<ul style="list-style-type: none"> <li>Innovative technologies</li> </ul>	<ul style="list-style-type: none"> <li>Underwrites private sector commercialization risk, thereby solving the equity gap</li> <li>Risks could be bundled across technologies/projects and securitized</li> </ul>	<ul style="list-style-type: none"> <li>Hard to scale such a product at this point</li> <li>Could involve high government cost; fee structure would need priced appropriately in conjunction w/private insurers</li> <li>Equity may still not invest if other risks viewed as too great</li> </ul>