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**Program for Increasing Participation from the Private Sector for Grants in California**

*Additional submitted attachment is included below.*

Program for Increasing Participation from the Private Sector for Grants in California

**1. What are some concerns and challenges the private sector, including small businesses and entrepreneurs, face when considering applying for grant funding opportunities?**

We have applied once under Myers Motors LLC. We are a small, entrepreneurial, business. The challenges I noticed are twofold in nature:

- A. There is an awful lot of paperwork that has to be filled out. It takes a lot of time and effort to fill out. Entrepreneurs and small business people are not necessarily the best paperwork people.

A solution to this is a variation of something the DOE does:

Ask for a preliminary one to two page write-up of the small business / entrepreneur's idea. Vet that idea and see if there is a way it could possibly work. If you don't think it could work, then tell them why not and then allow them to respond. Then, if you think it is a good idea, they can move to the next phase where more paperwork is required. If you tell them they can't move forward, allow them to re-apply in 6 months, but they have to show progress towards solving the problems that have kept you from accepting their idea.

- B. Matching requirements. Bigger companies with lobbyists and connections have an easier time getting funding because they also have the ability to self-fund the matching portion. It could be argued that at least some of the CEC funding is going to organizations or to projects that support organizations that have all the funding they need to do a project – and that the CEC funding is more like corporate welfare: that is, if a large, profitable business truly sees a business idea worth pursuing, they will find the money or already have the money. Perhaps for these groups, the CEC should be loaning money instead of granting it.

For the small business / entrepreneur, one reason I don't, and many others may not, apply is because we don't have the matching funds. If you require matching funds, your program requirements "discriminate" against companies and individuals who might have breakthrough ideas but are not connected or good at raising money. Coming up with the ideas and being a fund-raiser are two different skill sets.

The assumption underlying my recommendation is that very good ideas exist, but that in their early stages they are not fundable by outside funders – and that this is where the CEC should focus at least some of its efforts. In short, if the main focus of the CEC is to fund the best breakthrough technologies and ways to get to market and not limit themselves to ideas only other people will also fund, then there are four program ideas that may help the CEC in this regard:

- 1) Perhaps the CEC could find a grouping of Silicon Valley VCs or venture groups – many of which have lots of money and many of which want to see more sustainable products in the marketplace – to say that if the CEC believes an idea is worth the CEC giving a grant to, then one of these groups (or a consortium of them) will provide the match as a grant with the first right of refusal to fund whatever comes out of the R&D,
- 2) The CEC could count past investment as the match. In our case, we have spent \$4.2 million learning what we need to be successful. We need \$1 million more to bring a prototype to market – the prototype being the proof of concept that will help drive outside funding. In our case, we spent all our money getting to this point and have no more money to spend and so can't qualify. But, if past spending could be counted, then we would have an 80% match,
- 3) The CEC could do away with the matching portion altogether – and evaluate each idea on its merits and give grants to the best ideas out there without respect to whether they have a match or not, and/or
- 4) The CEC could turn the grant program into a loan program. The CEC gets a lien on the "IP." If the IP (not all plans will have IP, however) succeeds in creating value for funders to get involved, the recipient pays back the loan and gets the lien removed. This would provide the CEC funding for additional programs – and it would encourage the CEC to fund programs that could possibly succeed – but it may also have a harmful effect by making it harder for new, disruptive technologies, get CEC funding, even though they may be just the ones the CEC should be funding. See the following quote:

The "Bible" on disruptive technologies ("The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail" by Harvard's Clayton Christensen) outlines the case for CEC involvement even if no others have funds to invest ...

*“Perhaps the most powerful protection that small entrant firms enjoy as they build the emerging markets for disruptive technologies is that they are doing something that it simply does not make sense for the established leaders to do. Despite their endowments in technology, brand names, manufacturing prowess, management experience, distribution muscle, and just plain cash, successful companies populated by good managers have a genuinely hard time doing what does not fit their model for how to make money. **Because disruptive technologies rarely make sense during the years when investing in them is most important,** conventional managerial wisdom at established firms constitutes an entry and mobility barrier that entrepreneurs and investors can bank on. It is powerful and pervasive.”*

The point of the above quote is that the CEC can help fill in that gap – that is, providing funding to great ideas that don't fit how the established companies do business. It is these people and these ideas where the truly disruptive technologies will come from.

EXAMPLE: To illustrate the barrier to a disruptive technology being funded by the government, I offer this example with our interaction with the Washington DC DOE. Years ago they put out an RFQ for “novel” solutions to drive a vehicle 40 miles on electricity alone -- and demonstrate it on 300 vehicles. They were offering up to \$30 million per project – and would spend up to \$100 million in total.

I sent a couple page response showing how we could not only demonstrate such a vehicle but also sell way to bring to market a 60 mile range electric vehicle and that we could put 1,000 of them on the road for \$30 million – and that the vehicle would sell for less than \$20,000.

The contract administrator called me and said he was interested in how he could make his SUV electric – not create a new kind of electric vehicle and that our idea sounded more like getting to production versus just R&D.

So, who got all the grant money? GM, Ford and maybe one or two others got the money to create plug-in hybrids. Something they could afford to do and would have done by themselves. And what was the result of that funding of these companies? Unless you consider 3% or 5% of the budget for bringing the Volt on-line a success, the funding did nothing that wouldn't have been done without the funding.

What the DOE could have done is to realize that disruptive technologies typically don't come from industry leaders – and so they could have funded 10 non-automotive companies that were working on car programs and given them enough money to bring to market engineered prototypes that people could drive. More ideas and more products and more innovation would have occurred doing it that way than by just giving the money to big companies that weren't doing anything particularly innovative.

## **2. How can the Energy Commission better increase awareness of the research programs to California private sector companies?**

Awareness is not the problem. Entrepreneurs and small business people are on the hunt for funding. If there is a chance of funding, they will quickly find out. They will jump through hoops and fill out paperwork ad nauseum to get funding – but if they can't find matching funding, then they are out. So, a program that has the matching with it (Silicon Valley idea above) or that has no matching, will quickly bring lots of ideas to the CEC.

EXAMPLE: DOE ATVM fund. I went before them (met with both the head of the program and his Chief of Staff) and asked if I could apply for a loan to bring to market a <\$18,000 electric four-wheel car that would fit 80% of all driving jobs in the US and so would be the ideal 2<sup>nd</sup> or 3<sup>rd</sup> household car. They mentioned their matching requirement for their loan fund. I asked if they would give me the loan first and then allow me to use their approved loan to go out and get the match – AS THEY HAD DONE FOR BOTH TESLA and FISKER. They said “no.” Why? Because they assumed that because Tesla and Fisker had wealthy backers, that if they got the loan approved, they would be able to get the match whereas with me, I didn't have a wealthy backer and so they didn't know if I could get the match.

To say it again, the rules that govern government funding predisposes the funding to go to large companies and groups that favor companies that already have gained the backing of wealthy individuals and/or bigger companies looking for handouts. Now, you can say that it is the fault of the entrepreneur or small businessman to get the funding – and perhaps you are right. On the other hand, if the goal of the CEC is to find and fund potential breakthroughs, then it is these people who are least likely to have the matching funds the program requires.

(As Aptera and Fisker and others have shown, being able to raise money doesn't mean you will be successful: if the underlying business idea and technology is flawed and companies are promising more than is possible, then they can fool a lot of investors, but it won't make them successful (Aptera promised a 100 mile range and a \$27k cost – only to find out after

raising \$40 million that their true cost wasn't any better than anyone else's and their vehicle would cost \$40,000, not \$27,000).

### **3. What are some ideas to encourage private sector companies to apply for research funding?**

By way of personal example, allow me to tie all this together: I've spent 12 years and \$4.2 million of personal/family money in the quest for creating a profitable, highway legal, electric vehicle. After the experience gained from building, selling, and servicing 300 enclosed three-wheel vehicles between two companies (Corbin Motors and Myers Motors), we discovered: a) how to create an electric car that will fit 87% of all range and seating requirements, b) how to make a zero emissions electric car that is both profitable and mass-market affordable (with a selling price (after federal tax credits) of \$16,495), and c) how to set up a micro-factory in California to make such a car for well under \$50 million. This car should be at least 70% more energy efficient than a Tesla – and it plugs into standard 110-volt outlets for simple, overnight charging. But, I ran out of money to build a prototype of this car. I can't apply for a grant from California, even though California's goal of 1.5 million electric cars on the road by 2025 is falling further behind each year because EVs cost more than people are willing to pay and because no one making electric cars is profitable. I need \$1 million to build a prototype that can be used to show the technology and the costing is real -- to investors who can't "see" that all the technology has already been proven on the three-wheel vehicle. I can't apply because the CEC is no longer asking for investments in this area – and even if I could apply, I don't have the matching funds because no one believes that what we are claiming is possible: the "current wisdom" is that you need \$1 billion just to get in the game of making cars – and that it is impossible to compete with the car companies. So, the CEC funding would be extremely helpful in creating a way to solve the EV problem – but, we don't fit into how the CEC does its business.

A specific solution for our specific case: Let's go back to the DOE example as to a recommended solution in our specific case: Remember, they had up to \$100 million to spend. Let's pretend the CEC had this amount of money and they didn't like the idea of awarding 10 companies \$10 million each. Here is another way the \$100 million could be used to achieve something more than has happened with EVs so far:

- A. Announce \$100 million for electrifying driving,
- B. Announce looking for novel ideas from non-automotive companies,
- C. Ask for a two-page paper outlining their unique idea and why they should be funded,
- D. Choose the top 20 entries and give them \$100,000 each for marketing their idea on a website set aside for this effort by the

CEC – they can add their own money to the \$100,000. The purpose of the marketing dollars is to find out what the public would buy. The CEC could run this like an “American Idol” type program where the idea would be to get the most people possible to put down a \$1 deposits (can only “vote” once),

- E. Any company currently making a car could market their idea, but they would not get any funding in this or any other stage because they already have the funding necessary to do whatever they feel is necessary (and they can get ATVM loan funding),
- F. The CEC could choose five entries they believe in – and allow the marketing effort to choose the other five entries. This would be a total of 10 entries. Each entry would get \$5 million to build a prototype car and do the engineering and market their car. This is a 12-month step. Costing information would have to be provided to the CEC so that what is being proposed is realistic (as opposed to people gaming the system by promising a low price that isn’t possible – like how Aptera got \$40 million in funding by saying their \$27k vehicle could do certain things ... only to find out that they really needed to sell the vehicle for \$40k to do those things).
- G. The car that the most people choose would get the remaining \$30 million. Or, you could split the \$30MM by giving \$20MM to the top team and \$10MM to the 2<sup>nd</sup> place team.

NOTE: you could do this for any electric vehicle – motorcycle, motor scooter, NEV, etc. This process – especially part D -- would quickly sort out which programs capture the attention and desire of the public. For example, it is likely that the “crowd” would show that NEV’s have the lowest consumer interest, motor cycles and scooters next, and cars the most. By getting the end users involved and weighing costs and consumer interest the CEC is more likely to get a better read of what will be successful in actually becoming a product that consumers will want to buy.

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As a general solution: I think the CEC would be best served by outlining the main goals of the CEC – energy efficiency, sustainability, etc. And then ask small companies and entrepreneurs (not bigger companies) to send in one product idea per company that fits into one general category. In their submittal, they should outline the current state of their market, the benefits their solution will bring to that market, the next step of development that they need to take and how much funding they need, what is their anticipated price point in the marketplace, what is their cost to get to market, what do they believe the market size is, what tangible environmental / energy efficiency / sustainability benefits they will be



providing to the market in 5 years after commercialization, and the technological or market obstacles stand in their way of achieving these goals. Limit this to two or three pages to reduce the workload for the CEC. The CEC would have a ranking system to take the answers and rank their cost / benefit ratio. This would create a fair bit of work for the CEC – but it would have the advantage of finding if there are out-of-the – mainstream, disruptive ideas that could better solve the problems than the current solutions being offered. After the CEC's evaluation, it could then ask for more detailed information to evaluate.

The CEC might also consider asking people in to discuss their proposal. For example, if I sat down with the CEC, I could fully explain to where you would believe me, how we could build an electric car that sells for under \$18,000 (after federal tax credit), can handle up to 87% of all driving jobs, and only need \$50 million to get to market. However, in two pages, it is doubtful that I could convince you of this because no one else has done it before and it is generally considered “impossible.” Sitting down with people and sifting through all this would take more work on your side, but it has the potential to help you find the breakthrough disruptive ideas.

The current way the CEC operates seems to be that they ask for proposals for things they believe will make a difference. This may not be exactly correct ... but if there is no way to fund unsolicited proposals, then the CEC is making a mistake. The mistake is by assuming the CEC knows everything and every idea out there: it could very well be that there are ideas / plans out there that are better than what the CEC is funding but for which the CEC never asks or asks for too early (see the Gartner Hype curve as to how investors get all excited over a new technology but that the easiest investments are not always the ones that lead to success – and so later investments are also necessary / helpful).

- 4. Besides grant funding, what else can the Energy Commission do to help California private sector companies to be successful?** Read “The Innovator’s Dilemma” and recognize that the keys to the breakthroughs the CEC seeks oftentimes will come from companies and people who are outsiders – and that outsiders don’t always have the funds and the connections to make things happen. The key to enabling success is understand that a disruptive technology is, by definition, not ready for prime time applications, and so to start off bringing a disruptive technology to market, you have to be thinking of markets that could use the “not ready for prime time” technologies and then, as the technology improves, the market will grow. Applied to electric cars – the reason Tesla and all other EV makers are losing money is because they are trying to make an electric car that fits 100% of the driving duties of a gas car – and trying to get the price down to that of a gas car. That is the exact wrong approach – but, it is the approach everyone is funding (see Gartner Hype Curve).

The CEC wants to invest in those things that will truly make a difference – and that requires investing in things that may be contrary to where the crowd is going. That is hard to do. Recognizing how hard it is might be one thing to help those ideas to even be considered.

The key is ... if you are funding a disruptive technology, then fund things that can be successful. The book tells you how to find what things will be successful:

- A. Is the disruptive technology simple to use (e.g., electric cars that need a whole new infrastructure to be useful does not qualify as “simple to use” whereas having an electric cars so energy efficient they can charge overnight from standard 110 volt outlets and have all the range needed for the driving jobs for which they will be used is “simple to use.”)?
- B. Is the disruptive technology reliable?
- C. Is there a place where the disruptive technology can be applied so that is actually saves consumers money (e.g., today’s electric cars cost more to buy and operate over 5 years than an equivalent gas car – so, today’s EVs fail this test).

If the answer to each question is not a “yes,” then the CEC should not fund it – either because it is too early in the development cycle or it is too expensive or unreliable and so won’t have a real market.

If not 100%, then perhaps 50% or even 20% of the CEC budget should be for unconditional (i.e., non-matching) grants to small companies (i.e., less than 50 employees) / entrepreneurs for disruptive approaches to solve problems. And, if a great idea comes from a company, from, say, Ohio ... and they can get funded if they will move to California, then California will get the best ideas and the best new talent.

Lastly, it has been shown that in the USA, start-ups are down. Job creation from start-ups is down. Financialization – that is, using finances to make money instead of using finances to create jobs, has sucked up a bunch of the money that used to go into starting up job-creating businesses that can also solve environmental problems. By helping fund entrepreneurs and small businesses in the areas of concern, the CEC can fill in this gap and help accelerate sustainability and energy efficiency while creating jobs.

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