DOCKETED	
Docket Number:	19-SB-100
Project Title:	SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future
TN #:	232379
Document Title:	Mark Roest Comments - Comments Modeling Inputs and Assumptions Panel
Description:	N/A
Filer:	System
Organization:	Mark Roest
Submitter Role:	Public
Submission Date:	3/11/2020 1:04:57 PM
Docketed Date:	3/11/2020

Comment Received From: Mark Roest
Submitted On: 3/11/2020
Docket Number: 19-SB-100

Comments Modeling Inputs and Assumptions Panel

Senate Bill 100 Modeling Inputs and Assumptions Workshop
Comments: Panel 1
Mark Roest:
â€¢ Please look at the possible extremely rapid growth of BEV sales and conversions, and concomitant growth of distributed solar energy, using both rooftops and solar canopies to meet needs of both building and all the vehicles associated with it.
â€¢ We will be able to support that with a suite of technologies: Batteries with 3 to 5 kWh/kg capacity, selling at under $100/kg (keeping up what whatever the rest of the market can do, with ample gross margin), mass production in 2 years; 48% to 50% peak solar efficiency thin film (multijunction, stacked silicon and analog of CIGS), meet wholesale market price with ample margin, mass production in 1 to 2 years.
â€¢ Because the sun and wind are free, and the purchase cost will continue to fall while longevity increases, the point of cost recovery will come very quickly, more so going forward, the levelized cost and purchase price will be lower than BAU. After financing is paid off for both on-site solar and BEV conversions or new purchases, this will result in adding circa 20% to the income available for use for each market participant, from consumers to fleets.
â€¢ Please examine the high distributed generation with an economic motivation of getting to free energy, per the above statement. It will be highly attractive when all of the pieces are in production and marketed together.
â€¢ Key regarding trucks: our ally EVgin is now introducing the first of a series of retrofit kits, starting with F150 and equivalents, and going up to class 8 trucks and class D buses by the end of the year. Within 2 years he will be able to use our batteries, and says he wants them. We can put solar canopies over parking and on roofs at depots, distribution centers, ports, customer sites, and community sites, with advanced composite support structures (low cost, high strength), within 1 to 2 years. We will also sell to small and medium scale OEMs, and may sell to large OEMs. We will market aggressively and creatively, and ensure financing is available to all who need it. This will greatly accelerate uptake. Our goal is to completely electrify the fleet globally by 2030.
â€¢ Our ally Powers Design International has designs and tooling for a network of elevated, bidirectional, autonomous, Group Rapid Transit which can be an attractive overlay over the current transportation system, able to relieve congestion to a high degree (close headways, sidings for each stop).
â€¢ With structural and construction breakthroughs, we can also extend the GRT guideways vertcally to provide elevated bicycle paths, separated for fast and slow riders, pedestrians, and misc. active mobility devices. We plan a solar canopy at the top that provides all power needed for the stationary batteries that feed the GRT system, with surplus for electric bicycle charging and to support surrounding communities.
â€¢ Our high performance battery and solar are based on ceramic semiconductor physics which the CTO has been pioneering for 50 years. We do not use lithium cobalt,

nickel or rare earth materials. We replaced the toxic and expensive materials in CGIS with commodity ceramic oxides.
â€¢ Regarding your estimates for solar -- our solar will be printed, at 55 GW per factory per year, and our batteries will be fabricated in adapted ceramic tile plants that have an expected output of 120 to 200 GWh per year.
â€¢ In other words, we designed from the start for high volume.
â€¢ I am available to explicate everything I wrote, and I have lots of written material with short overviews of each subject. I work with pioneers in each field I cover.
â€¢ I almost forgot to mention that our CTO has designed a line of solar and battery powered aircraft. They are calculated design sketches. I have joined the Vertical Flight Society and participated in NASA's Aerospace Supply Chain Workshop recently. There is huge need for our batteries for aircraft, and we can impact global use of jet engines and jet fuel if we get the financial support we need.
â€¢ Our aircraft designs are aimed at regional airport use and enhancing economies in rural areas, including developing nations.
â€¢ They are based on glider designs, and use advanced composites. Powers Design International wants to build them for us, and may help with more detailed design.
â€¢ On the structural side, I am advising sources of advanced structural geometries, and Ultra-High-Performance-Concrete, and I have some preliminary ideas for offshore, floating wind turbine design, and a large ship which can support production and placement of offshore turbines.
â€¢ We will NOT need combustion at all as an energy source. The only use for hydrogen is in fuel cells, and only if it comes from solar, wind or other totally renewable resources.
â€¢ The marginal cost of goods sold is confidential, but as the market evolves between now and 2030, we will always be able to expand it as much as is necessary to meet humanities carbon goals, including pulling carbon back out of the atmosphere.
â€¢ We should have a private discussion of long-term battery storage -- how much is truly needed with demand response extending to a fully battery-electric fleet and infrastructure, all supported largely by distributed generation -- and what can happen to the price of storage, PV and Wind power in the context of a public-private partnership or other social benefit model.