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distributed energy resources june 2022

see pdf file uploaded

Additional submitted attachment is included below.

Lead Commissioner Workshop to Launch Distributed Energy Resources in California's Energy Future Proceeding June 2022

Submitted by David Bezanson, Ph.D., CA voter, 15 June, 2022

Thank you for presenting the 2 workshops and inviting public comment on one of the most critical issues in the transformation of our power sector. I look forward to reading your plans.

CLEAN ENERGY DEFINITION

Herein, clean energy excludes 2 of the renewables as defined by CARB a) nuclear reactors, b) biomass combustion. Like hydrogen produced from methane and grid electricity, each emits GHGs and/or toxics with GHG properties over its lifecycle. Clean energy includes geothermal, wind, solar, existing (but not new) hydroelectric, and green electrolytic hydrogen made with clean electricity.

https://www.sciencealert.com/confidence-grows-in-mit-spin-off-aiming-to-make-the-deepest-hole-for-limitless-energy

NONENERGY BENEFITS

Premature Mortality

In 2018, 8.7 million people suffered premature mortality from fossil fuel (FF) industry particulate matter (PM) emissions. A 2021 study estimated 10.2 million. Estimates of the number of annual premature deaths from FF PM in the US range from 335,000 and 355,000. Using 340,000 and dividing this by the population of the US in 2018 (327 million) equals 0.1%. The CA population in 2018 was 39 million. 0.1% of 39 million is 39,000. The value of a statistical life in the US is $10,000,000. Thus, the annual total value of lives lost is $390 billion (39,000 times ten million).

Combustion of FF emits about one dozen toxics. Mortality from the other toxic co-pollutants was not estimated. Many of these toxics are also GHGs, which are the foremost cause of climate change. Let's consider the 20-year GWP of a few.

CO2	1	
Methane	85	(from fugitive emissions and venting)
NOx	nearly 300	
Black carbon	4,400	this is part of PM

The toxic impact of each of the above on morbidity and mortality should be included in benefit / cost analyses. The GHG impact of each of the above on climate change should be included in benefit / cost analyses. All of these are part of the Social Cost of Carbon.

What is the death toll from climate change (that is not due to toxic airborne pollution)? One estimate is 150,000 annually. This is a very conservative estimate because cause-of-death records rarely mention air pollution. There is a high probability that premature mortality from climate change, as well as toxic co-pollutants, will continue to increase as long as FF combustion continues. Between 2030 and 2050, over 250,000 deaths per year are projected to be caused by weather extremes. Notice how small these numbers are when contrasted with premature mortality from FF PM.

.https://www.seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higher-previously-thought

Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem - ScienceDirect

Value of life - Wikipedia

How Much Is a Human Life Actually Worth? | WIRED

Resilience

During power outages, people still depend upon electronic medical devices. Without clean DER, people would fire up their fossil-powered generators - releasing medically-harmful toxic pollutants. The work of most people (at an office, job site, or home) requires a continuous supply of electricity. The loss of productivity should be included in benefit / cost analyses.

https://e360.yale.edu/features/three-myths-about-renewable-energy-and-the-grid-debunked

TRIBAL COMMUNITIES

Like other communities, many tribes depend upon environmental integrity in order to sustain their economy and culture. DER diminishes their reliance upon fossil energy and its damage to natural resources. E.g., some fossil pipelines have been constructed on tribal lands, despite opposition by tribes. Leaks are very common from pipelines. Fugitive emissions of methane are accompanied by toxic emissions from trucks, compressors, and controllers. These accelerate climate change and increase risk of many chronic medical problems. Oil pipelines have been situated next to tribal water resources and contamination from leaks is common. Pollution creates many problems from diminished biodiversity, decreased agricultural productivity, to medical problems from use of toxic water.

Tribes should be given opportunities to situate DER on their lands for their own energy needs and to sell clean energy to those outside of the reservation.

INTERIM TARGETS FOR CLEAN GENERATION AND STORAGE

Set earlier target dates than are specified or implied by the Scoping Plan 2022 and SB 100.

The consensus of research on the power sector in CA indicates that 2035 is a feasible date for reaching at least 90% of our grid energy from clean energy. Gov. Newsom has requested agencies to evaluate whether 2035 is a reasonable target date for achieving economy-wide carbon neutrality. The power sector is the most important sector to transition to net-zero first. Thereafter, all other sectors will be powered with clean energy.

If the Scoping Plan 2022 declares a target date of 2045 for economy-wide carbon neutrality, the energy agencies including CEC should regard this as the lowest bar to consider. The energy agencies should target 90% clean energy in the power sector by 2035 and plan accordingly, using interim targets for every 3 years. This would benefit all sectors of our economy, drive down the cost of electricity, improve public health (especially for communities suffering from environmental injustice), and speed the attainment of net zero in all other sectors. Rapidly scaling clean energy is feasible and provides robust economic advantages over delaying decarbonization.

https://insideclimatenews.org/todaysclimate/scientists-say-theyve-created-a-roadmap-for-cutting-us-emissions-in-half-by-2030/?utm_source=InsideClimate+News&utm_campaign=39f1c16948-&utm_medium=email&utm_term=0_29c928ffb5-39f1c16948-329124685

https://www.carbonbrief.org/windfarms-raise-incomes-and-house-prices-in-rural-us-study-finds/

https://www.prnewswire.com/news-releases/deloitte-research-reveals-inaction-on-climate-change-could-cost-the-worlds-economy-us178-trillion-by-2070-301552395.html

https://www.utilitydive.com/news/reliably-hitting-85-clean-electricity-has-huge-implications-for-california/623442/

https://energyinnovation.org/wp-content/uploads/2021/01/Cost_of_Delay.pdf

https://web.stanford.edu/group/efmh/jacobson/Articles/I/CombiningRenew/100PercentPaperAbstracts.pdf

https://physics.aps.org/articles/v15/54

How Many Jobs Could the Clean Energy Transition Create?
https://rmi.org/insight/assessing-market-options-for-clean-energy-and-capacity-in-pjm/?utm_medium=email&utm_source=spark&utm_content=spark-b&utm_campaign=2022_03_10

Bold Action Required to Decarbonize Power Grid, According to New Strategic Plan

https://insideclimatenews.org/news/10022022/inside-clean-energy-solar-recycling/?utm_source=InsideClimate+News&utm_campaign=e96fd4ee31-&utm_medium=email&utm_term=0_29c928ffb5-e96fd4ee31-329124685

https://www.utilitydive.com/news/california-iso-sketches-305b-draft-transmission-plan-to-meet-states-clea/618230/?sfmc_id=4461433

https://www.canarymedia.com/articles/policy-regulation/will-california-finally-fix-its-community-solar-programs?utm_id=48218&sfmc_id=4461433

https://insideclimatenews.org/news/27012022/inside-clean-energy-solar-power-efficiency/?utm_source=InsideClimate+News&utm_campaign=baa30e4bfe-&utm_medium=email&utm_term=0_29c928ffb5-baa30e4bfe-329124685

https://rmi.org/us-renewable-energy-portfolios-can-outcompete-new-gas-plants/?utm_medium=email&utm_source=spark&utm_content=spark&utm_campaign=2022_01_06

https://rmi.org/report-release-headwinds-for-us-gas-power/?utm_medium=email&utm_source=spark&utm_content=spark&utm_campaign=2021_12_16

https://rmi.org/insight/its-time-to-rethink-subsidized-gas-line-extensions/?utm_medium=email&utm_source=spark&utm_content=spark&utm_campaign=2021_12_09

s://www.project-syndicate.org/commentary/clean-energy-beats-fossil-fuels-in-market-terms-by-jules-kortenhorst-2021-10

GENERATOR TECHNOLOGY OPTIONS

These may be powered by the grid, powered independently, or powered from local stored energy. Commercially available technologies include diesel, PV solar, and hydrogen fuel cell. The latter should be allowed to be used in CA only if powered by H2 made from electrolysis powered by 100% clean electricity.

SITING OF DER

Brownfields are land that has no reliable utility for agriculture, development, habits, or sequestration. These are, however, suitable for solar farms, as demonstrated in many communities. Solar panels may be situated over canals and there is a plan to construct such in CA. Like brownfields, it does not use up land that has other uses. One advantage of solar canals and PV solar floating on water is that they decrease the rate of evaporation.

https://time.com/6183376/landfills-becoming-solar-farms/

https://www.modbee.com/news/business/agriculture/article258071918.html?utm_id=48218&sfmc_id=4461433

Could this solar farm be a climate change solution? (msn.com)

LARGE MULTI-CITY AND MULTI-COUNTY DER

Create partnership opportunities for nearby multi-city and adjacent multi-county DER projects. Planning assistance, drafting common building code standards (that meet or exceed CA codes), facilitation of fast-track permitting, and financing options should be provided to coalitions of local government stakeholders. For example, a geothermal facility or wind farm could be developed to serve multiple adjacent counties. Each county would have exclusive rights to receive a certain percentage of the jointly-owned electricity. These projects may be large enough to interest union-scale labor in constructing and maintaining these DER. If multi-local government DER requires more transmission lines, these governments should be permitted to construct, own, and maintain transmission infrastructure - free of any surcharges or penalties being imposed by the regional utility company.

Facilitate collaboration and integration of existing and new CCAs to maximize benefit / cost, realize economies of scale, increase local government autonomy, improve resilience, clean up the grid, and ensure freedom from regional utility intervention. Commonly-owned DER should include generation, storage, microgrids with demand-response functions like TOU, and transmission. Volume discount arrangements for multiple counties to purchase energy efficient appliances, building materials, VGI-enabled electric vehicles, EV charging stations, controls, and labor services (e.g., retrofits of buildings), should be orchestrated by CEC.

Privately-owned community banks are a suitable source of financing. CA legislation passed in 2021 to create public banks. This policy framework should be used to create local and regional public banks. Joint public-private financing options should be available.

Multi-county DER infrastructure projects that generate revenue should be encouraged. One example is surplus generation and storage that could be sold to other counties. This would increase local job opportunities, which could be integrated with housing development planning that enables workers in the DER economy to live near the DER infrastructure. This is especially needed in communities that have a dwindling economy, e.g., those dependent upon dirty biomass electricity or logging. Work with other agencies (e.g., CalGEM) to halt permits for new fossil fuel infrastructure while fast-tracking permits for development of DER projects.

https://www.greencarreports.com/news/1135966_seattle-is-installing-curbside-ev-charging-by-request-for-those-without-off-street-parking

https://cityrenewables.org/local-government-renewables-action-tracker/

https://www.sciencedirect.com/science/article/pii/S2214629621004783

https://rmi.org/local-governments-are-stepping-up-grid-decarbonization-in-2022/

https://cacurrent.com/ccas-leading-on-clean-energy-acquisitions/

https://rmi.org/states-move-swiftly-on-performance-based-regulation-to-achieve-policy-priorities/?utm_medium=email&utm_source=spark&utm_content=spark-a&utm_campaign=2022_03_31&utm_term=text

ALL-ELECTRIC BUILDING CODES

This is an urgent matter. All-electric buildings are well- proven and more economical to build than structures with fossil gas. CEC should offer municipalities building electrification consultations, with incentives for early adoption. Cities that delay enactment of ordinances for all-electric codes should be charged an annual fee. Revenue from the slow adopters should be diverted to early adopter municipalities. New building REACH codes provide the quickest economic as well as decarbonization benefit. Existing building retrofit policies and incentives generate a slower path to positive ROI. The property tax for existing fossil gas buildings should be raised and the revenue used to decrease property taxes for retrofitted buildings.

LOCAL GRID UPGRADES
In most cities, the load-handling capacity of the grid significantly limits the electrification potential of buildings, industry, and transport. Local grid retrofits can facilitate the adoption of complete electrification measures in cities. CEC should draft retrofit programs that assist municipalities to realize 100% electrification.

https://rmi.org/low-carbon-fuels-have-a-limited-role-to-play-in-new-yorks-buildings/?utm_medium=email&utm_source=spark&utm_content=spark&utm_campaign=2022_06_09&utm_term=button

https://www.paloaltoonline.com/blogs/p/2022/02/06/palo-altos-climate-goals-threatened-by-inadequate-power-grid?utm_source=express-2022-02-07&utm_medium=email&utm_campaign=express

https://www.pv-magazine.com/2021/12/14/grid-software-solution-could-more-than-double-network-capacity-for-renewables-with-no-new-infrastructure/

REVENUE SOURCES TO DECARBONIZE THE CA GRID

Green bonds issued by municipalities or the state

Increase the production tax on oil and gas extraction (which is lower than in other states)

Clean energy performance plans for CCAs and shareholder-owned utilities

Private company plans to pay for retrofits of buildings up front and collect monthly payments from owners.

https://www.canarymedia.com/articles/energy-efficiency/from-home-improvement-to-securitization-the-virtuous-cycle-to-supercharge-residential-energy-efficiency

DECREASE THE COST OF ELECTRICITY

If multi-county DER projects generate significant surplus electricity, counties could sell some of this
a. To the regional utility company (e.g., via net metering)
b. Directly to other counties who are energy deficient.

This would increase competition amongst energy-generating entities and diminish costs.

Incorporate the externalities of fossil energy into fossil prices (see section above on NONENERGY BENEFITS). This internalization of externalities will increase the cost of fossil energy and make it less competitive with the declining costs of clean energy. Conservation of energy and increased efficiency will decrease demand, driving down cost.

https://haas.berkeley.edu/energy-institute/events/energy-institute-webinar-borenstein-bushnell/

clean energy can protect against inflation

Legal Petition Seeks Federal Trade Commission Investigation of Energy Utility Abuses - Center for Biological Diversity

https://www.inet.ox.ac.uk/files/energy_transition_paper-INET-working-paper.pdf

https://www.commondreams.org/views/2021/09/15/reducing-energy-consumption-only-long-range-solution-climate-change