

<b>DOCKETED</b>	
<b>Docket Number:</b>	18-IEPR-09
<b>Project Title:</b>	Decarbonizing Buildings
<b>TN #:</b>	223992
<b>Document Title:</b>	Michael Bullock Comments Recommendation to Reduce GHG Emissions from Buildings, Including Car Parking
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Michael Bullock
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	6/28/2018 3:01:12 PM
<b>Docketed Date:</b>	6/28/2018

*Comment Received From: Michael Bullock*  
*Submitted On: 6/28/2018*  
*Docket Number: 18-IEPR-09*

## **Recommendation to Reduce GHG Emissions from Buildings, Including Car Parking**

Mike Bullock  
1800 Bayberry Drive  
Oceanside, CA  
June 28, 2018

Greetings,

### **Introduction**

Please allow me to introduce myself. I have a BSEE, an MSE, and worked for Lockheed Martin for 36 years. For most of those years I worked as a Satellite Systems Engineer. For the last 11 years I have been working on the problem of how cars and light-duty trucks can achieve climate-stabilizing targets. In that work, I have presented 6 papers at the Air and Waste Management Association (AWMA) conferences and 4 papers at the Energy Utility Environment Conference (EUEC). I have also worked on the issue of climate change and transportation in the California Democratic Party (CDP) as a member of both the San Diego County and the California Central Committee.

### **Initial Assessment**

It is important to recognize that in California, cars and light-duty trucks (Light-Duty Vehicles, or LDVs) emit significantly more greenhouse gas (GHG) than electricity and NG combined. Good progress is being made on reducing GHG emissions from the electrical sector. However, LDVs are proving to be much more difficult. The work I have done on LDVs shows that we cannot possibly convert from internal combustion engine (ICE) LDVs to zero-emission vehicles (ZEVs) fast enough to not need to also significantly reduce per-capita driving.

CARB must realize that car-parking facilities are part of any building and how those parking facilities are operated is an extremely important consideration in doing an honest and complete evaluation of how a building performs regarding its impact on the emission of GHG.

Considering the current state of our anthropogenic climate change crisis, it is too late to be intellectually lazy. "Free" parking may be easy but a systems analysis shows it to be unacceptably poor regarding both economic fairness and GHG emissions.

But first, ignoring the car parking facilities, as most will, here are my recommendations:

### **Ignoring Car-Parking Facilities**

#### **Recommendations**

1. CA needs policies to decarbonize and electrify buildings. Investing in electrification and efficiency is necessary. Keep in mind also that for the case of near-proximity geothermal energy, it may be best to use that energy source for air and water heating. That option should never be overlooked. Gas use in buildings for heating should be phased out. So-called biofuels have no future. NG will always contribute to methane leakage. NG must be phased out as soon as possible.
2. More to the point: "Decarbonized fuels" (i.e. biogas and power-to-gas) is not a viable strategy to decarbonize buildings. Limited and more expensive supply, methane leakage, criteria

pollution, and safety issues make this strategy a waste of time and money.

3. Building electrification, along with improved efficiency, and geothermal use when available is the least cost and most viable strategy to decarbonize CA's buildings

4. Beyond GHG benefits, electrification offers energy efficiency, grid harmonization, better air quality and health, economic and job growth, safety, comfort and climate resiliency benefits.

5. The CEC, CUC, and CARB should establish building electrification and efficiency targets for 2030-2050 through a public process and then develop a joint plan to achieve those targets.

6. Please have CEC/CPUC/CARB and other agencies unlock funding to support building efficiency, electrification, market transformation for heat pumps via rebates/incentives and fuel-switching programs and the use of geothermal, when available.

7. Recommend all agencies account for methane leakage in all GHG accounting, reporting, and decision-making. Methane leakage should be attributed to the end use sector (i.e. in this, case buildings) and not all lumped into the Industrial sector which I understand is CARB's current practice. This should include behind the meter leakage as well.

### Car Parking Facilities

#### Background

For a single story building, the area of car parking is often nearly 1.5 times the area of the building. This is calculated using the requirement of 4 car-parking spots per 1,000 Square Feet of building area, which is the baseline zoning in many municipalities AND the fact that only about 120 cars can be placed on an acre of land. (4 cars required  $4 * 44,000/120 = 1,466$  square feet.)

The question arises: Is the car parking system used for a building a consideration in the building's energy use? It certainly should be. After all, about 7 years ago, when electricity was much more GHG-emitting than it is now, in SD County, electricity and gas together only emitted 34% of the GHG while LDVs emitted 41%. It is more lopsided now that electricity is cleaner.

It is well known that so-called "free" parking greatly increases the Single Occupancy Vehicle (SOV) mode split, compared to similar locations that have value-priced parking.

However, just introducing a charge for parking is likely to be unpopular with employees or other potential drivers and it could never be supported by the CDP, an organization which is concerned with wage discrepancy.

Dividend-Account (DA) Parking (defined in Reference 1) conforms to the official policy of the largest and most influential political and environmental organization in California, which is the CDP, as expressed in its party platform. Bundled-cost and/or bundled-benefit car-parking systems (erroneously called "free parking") do widespread and unacceptably large harm.

Society now has great technology. CARB needs to update its thinking on this issue.

#### Recommendations

1. Parking facilities should include charging stations. As you know, most BEVs will have a range of well over 200 miles, even though most commutes will be less than 20 miles each way. We know that V2G (vehicle to grid) energy transfer will be an option in the future. This means that charging at work can allow for a significant discharging when the vehicle arrive home, killing the so-called "duck curve" for good.

2. First at employment centers, as describe in Reference 1 but later at other types of destinations, as described in Reference 2, bundled-cost or bundled-benefit car parking facilities should be replace with Dividend-Account Car-parking systems. I am working on a Request for Information (RFI) to locate a worthy vendor. Please contact me if you would like to see the document and to see Reference 2.

Thank you for your leadership.

Highest regards,

Mike Bullock  
1800 Bayberry Drive  
Oceanside, CA 92054  
760-754-8025

*Additional submitted attachment is included below.*

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**Oceanside, CA**  
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Highest regards,

A handwritten signature in black ink, appearing to read "Mike Bullock". The signature is fluid and cursive, with the first name "Mike" and last name "Bullock" clearly distinguishable.

Mike Bullock  
1800 Bayberry Drive  
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760-754-8025