

From: Charles Griffith
Sent: Tuesday, July 07, 2020 1:30 PM
To: Kahan, Jeffrey <JKahan@a2gov.org>
Cc: Colvin-Garcia, Carlene; Mirsky, John <JMirsky@a2gov.org>
Subject: Re: EV Readiness Improvements

Jeff,

Below are our responses to Craig's email. We don't really see anything that we would recommend incorporating into the draft, having already incorporated as many of Craig's suggestions through the Work Group. As far as we knew, he was satisfied with the draft we were forwarding to the Planning Commission. He didn't even give the Work Group the courtesy of letting us know he was opposed and planning to offer an alternative directly to the Commission. Pretty disappointing, I must say.

We also wanted to forward our updated memo describing the Work Group's position on the request to require renewable energy be used for EV charging. See that attached.

Charles

1. The Work Group chose 100%EV Readiness for multi-family residential (65% EV-C, 25% EV-R and 10% EV-I) because we felt everyone should have the option of charging an electric vehicle at home, just like those in single-family residential. Having a lower % could result in some residents having access to charging and not others if they don't happen to live in a unit that has an EV-Ready parking spot. We also spent considerable time considering the % requirements for other parking uses, and feel our proposed readiness targets are reasonable. The predicted rate of conversion to EVs continues to increase and may reach 50% long before current projections. Since buildings and parking lots last for many decades, not providing adequate provisions for EV charging will result in increased costs and site disruptions given that retrofitting is much more expensive than installing electrical infrastructure during new construction. With the high percentage of rental units in the area and the high cost of living in Ann Arbor causing many to commute, making sure that charging is available at places of work is important.
2. The EV-C category is a cost-saving element, which Mr. Toepfer says he is concerned about, to reduce the amount of wiring and electrical circuits required upfront. Providing conduit to a parking area can eliminate the need to trench for the installation of charging stations at a later date, which is likely the most biggest cost-saving element of the ordinance.
3. The work group discussed at length the power needs for EV charging and prepared a **separate memo** describing language that was added to the ordinance recommending consideration of renewable energy as a power source. EVs are already considerably more efficient than internal combustion vehicles and will be even cleaner from an emissions perspective as DTE and the City pursue stronger renewable energy targets, such as through the A2Zero carbon neutrality plan. With the density of Ann Arbor, there is rarely if ever enough solar access to provide more than a small portion of a building's total energy needs from solar. Many don't have any on site access at all. Promotion of the installation of solar on buildings would be more comprehensively addressed somewhere other than in the EV Charging Ordinance.
4. The work group already considered Mr. Toepfer's suggestion to allow for a range of acceptable voltages and capacities for EV charging in its ordinance language. For example, **Section 5.19.8 G.4.a. states:** EVSES Level 2 charging alternating current (AC) ratings (voltage/circuit breaker rating): 240/208 V / 20, 30, 40, 50, and 60 A. The range of acceptable voltages and current capacities can be alternatively used for specific expected conditions of use in consideration of electric power supply

capacity for compliance. One EVSES can be used to provide charging to more than one parking space providing a minimum of 20 A per space is available.

On Jul 6, 2020, at 4:32 PM, Charles Griffith wrote:

Thanks for sharing, Jeff. We will confer further among ourselves, but my immediate response is that Craig had many months to provide comments on the ordinance and if fact did make many suggestions that were incorporated. His present comments, quite frankly, are coming out of left field with little justification.

We'll get back with you with some more specific responses to his points.

Charles

On Jul 6, 2020, at 2:13 PM, Kahan, Jeffrey <JKahan@a2gov.org> wrote:

Hi Guys,

See email below from Craig Toepfer.

Could you please provide me with a brief response to each of his points prior to the Planning Commission meeting tomorrow (maybe by early afternoon tomorrow, if possible). It will be good to be prepared with a response.

If any of his points are reasonable and can be incorporated into the draft, we should identify them in advance.

I can't argue with his point about on-site solar, but that really pertains to other sections of the code.

Thanks.

Jeff

From: Lenart, Brett <BLenart@a2gov.org>
Sent: Monday, July 06, 2020 1:49 PM
To: Craig Toepfer
Cc: Kahan, Jeffrey <JKahan@a2gov.org>; Gale, Mia <RGale@a2gov.org>
Subject: RE: EV Readiness Improvements

Thank you for your comments, they will be shared with the Planning Commission.

Sincerely,

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From: Craig Toepfer
Sent: Monday, July 06, 2020 1:45 PM

To: Planning <Planning@a2gov.org>

Subject: EV Readiness Improvements

Having provided professional technical leadership in the development of national, international, and industry EV charging standards, I was invited to contribute to A2Zero and provide electric code advice to the EV Readiness Working Group. The Ann Arbor carbon neutrality goals are vital to sustain Ann Arbor's desirable community environment and a livable future. Electric vehicles are the primary technology to achieve the challenging goals. Although the proposed EV readiness code has seen improvement over time, the present proposed code contains significant issues that should be addressed and resolved prior to approval by the Planning Commission. Specifically:

1. The required EV space requirements are excessive with minimal immediate effect and contrary to the WG's projected EV market share. Specifically, the projected median EV market share for 2050 is 35% and the required EV spaces is 100% for multi-family residential and hotels/lodging - with only 10% and 25% functional respectively. The proposed EV spaces for retail and general public parking are also excessive and contrary to "real world" EV owner experience. Anecdotal experience is that an EV owner wakes up to a fully charged vehicle and goes about their day. EV performance allows full daily functionality and the EV owner returns home to recharge the miles used over night. Fast charging compliments home charging and is limited to extended travel needs exclusively.
2. The EV Capable (EV/C) classification represents poor engineering practice and can not be administered or enforced effectively. The designation is based on false and misleading documentation comparing new construction vs. retrofit costs. Installing empty "conduit" that is "capped for future EV parking space(s)" combined with the noted excessive requirements above simply drives costs up with no measurable benefit. A detailed technical description of the classifications and reasonable applications can be provided on request. Additionally, a complete menu of means is available to developers that reduce or lower EV infrastructure installation cost.
3. The profound implications of EV charging on electric power and energy have not been adequately considered. An EV represents the largest single increase in electric demand since air conditioning on the 1950's. An EV can increase the maximum home power demand by nearly 100% and increase daily energy use by 33% for the average daily commute of 37 miles. A full overnight EV charge can power the average home for 3 days. The tripling of EV efficiency over a conventional vehicle is negated by the incurable inefficiency of the central station coal/nuclear steam turbines and methane gas turbines that waste 2 to 3 times as much energy as they produce. Moving "tailpipe" emissions to "smokestacks" in the communities surrounding the 26 electric power plants on the US shore of Lake Erie reduces overall EV emissions by 20%. It is scientifically and intellectual dishonesty to believe that faraway solar generated energy will find its way to Ann Arbor. To the contrary, onsite solar energy for EV charging, direct or displaced, is truly "carbon neutral" and the only means to achieve the goals of A2Zero. A solar panel the size of a standard parking space, 10' x 20', will produce enough average energy daily to provide up to 40 miles of EV range - 3 more miles than the US automobile average. Furthermore, the solar array doesn't produce any emissions or waste heat and has a life expectancy of 75 years. A means to encourage the broad scale use of onsite solar energy for EV charging should be incorporated into the code requirements. Many innovative methods are being used successfully to increase solar utilization in other cities, states, and countries.
4. Time is an important consideration in EV charging and links power and energy demand to the unique needs of EV charging. The full range of EV charging equipment should be available for code compliance. A table of the range of suitable power ratings and expected EV range with respect to time should be considered.

The following recommended changes to the proposed code can reduce overall EV infrastructure cost - 50% or more, reduce peak power and demand while maintaining the delivered energy, improve consumer access to EV charge energy, and contribute to achieving the carbon neutrality goals of A2Zero.

1. Set reasonable EV space requirements as shown in the table.
2. Eliminate the EV/C classification. The EV Ready (EV/R) and EV installed (EV/I) classifications should be required as shown in table.
3. A complete analysis on the power and energy impacts of EV charging and the means of managing the increase effectively should be an important input to the code development process - including emphasis on clean energy solutions.

Respectfully submitted,

Craig Toepfer

Type of Development	EV-Ready	EV-Installed
Residential: Single-family/Condominium	100 %	
Residential: Multi-family		35 %
Parking: Public, Commuter, Workplace		25 %

Hotel and Lodging	25 %
Recreation, Institution	10 %
Office, Health, School	10 %
Retail, Food Service	10 %

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