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From the Director, Department of Transportation, Requesting Permission with the Milwaukee County Transit System (MCTS) and Policymakers to Study the Efficiency and Performance of BEB (Battery Electric Bus Technology), by recommending adoption of the following:

A RESOLUTION

WHEREAS, the 2019 Adopted Capital Budget (the Budget) directed the Milwaukee County Transit System (MCTS) to initiate the transition of its vehicle fleet to Battery Electric Buses (BEBs); and

WHEREAS, specifically, the Department of Transportation (DOT) and MCTS were directed to begin the pertinent facilities planning related to BEB repair and maintenance needs, utility rate-structure, and related charging infrastructure; and

WHEREAS, the Budget further directed the purchase of up to 15 BEBs, extending pricing for future-year purchases, and charging and infrastructure needs to accommodate the planned initial Bus Rapid Transit (BRT) bus purchase of 11 BEBs, as well as at least four additional BEBs for general use; and

WHEREAS, the Budget provided for the possibility of seeking bids for Hybrid Electric Buses (Hybrids) as a transitional technology; and

WHEREAS, per Adopted File No. 20-850, it is Milwaukee County (the County) policy to pause acquisition of BEBs, after procurement of the initial 15 BEBs, to allow DOT, MCTS, and policymakers to study the efficacy and performance of BEB technology; and

WHEREAS, in accordance with the County’s policy directive, MCTS is working with MJ Bradley on development of a Request for Proposals for acquisition of Hybrids; and

WHEREAS, research and analysis performed thus far indicates that acquisition and implementation of Hybrids into the MCTS fleet and route system presents more challenges than originally identified; and

WHEREAS, for example, 5,100 total hours of BEB maintenance training is required, and there are few mechanics who already have this training; and

WHEREAS, additionally, mechanics will be required to wear Personal Protective Equipment (PPE) when performing maintenance on BEBs to prevent electrocution, and first responders will also need to wear PPE in the event of a BEB-related accident or emergency; and

47 WHEREAS, Hybrid maintenance is also complex, as the fuel technology is
48 comprised of battery packs, diesel engines, and electrical components; and

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50 WHEREAS, while the technology could potentially lead to an average increase in
51 fuel efficiency of up to 15 percent, it is estimated that Hybrids operation along MCTS'
52 route system would realize closer to a six percent increase in fuel efficiency due to bus
53 idling; and

54
55 WHEREAS, geofencing is a benefit of Hybrids, as the engines can be
56 programmed for electric-only use along certain sections of a given bus route, however,
57 because batteries degrade with use, the size of areas programmed for electric-only use
58 become smaller and smaller over time; and

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60 WHEREAS, in terms of greenhouse gas emissions savings, there is no
61 difference in output of Nitrous Oxide emissions between Clean Diesel Buses
62 (Clean Diesels) and Hybrids, as Clean Diesel engine emissions continue to improve
63 from one generation to the next; and

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65 WHEREAS, for many of these reasons, the transit industry is slowly transitioning
66 toward BEBs, and away from Hybrids, as an alternative to Clean Diesels; and

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68 WHEREAS, another significant challenge of embarking on a full fleet transition
69 from Clean Diesels to Hybrids or BEBs is the cost of both infrastructure and bus
70 procurements; and

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72 WHEREAS, the bonding cap for 2021 is \$46,275,475; and

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74 WHEREAS, even with a 3 percent year over year increase in the bonding cap,
75 the purchase of Hybrids and BEBs would consume most of the available bonding over a
76 two-year period; and

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78 WHEREAS, because of the many substantial requirements and challenges with
79 transitioning from Clean Diesels to Hybrids and/or BEBs, DOT recommends a
80 three-pronged approach to bus replacement, with a gradual fleet transition to BEBs as
81 follows:

- 82
- 83 • Operation of 11 BEBs, deployed on the East-West BRT route beginning in late
84 2022, will be considered as a one-year pilot program (approximately 4th quarter
85 2022 to 4th quarter 2023) with the intent to eventually acquire more BEBs for
86 deployment on other routes.
 - 87 • DOT and MCTS will report its findings to the Milwaukee County Board of
88 Supervisors (County Board) in the first quarter of 2024.
 - 89 • Replacement of aging buses with clean diesels will continue until after the pilot
90 program is completed, and data is presented that will inform future County Board
91 decisions.

- 92 • Transition from Clean Diesels to BEBs, and not use Hybrids as an interim
93 transition technology.

94
95 ; and

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97 WHEREAS, the Committee on Transportation, Public Works, and Transit, at its
98 meeting of June 9, 2021, recommended adoption of File No. 21-509 (vote 4-0); and

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100 WHEREAS, the Committee on Finance, at its meeting of June 17, 2021,
101 recommended adoption of File No. 21-509 (vote 7-0); now, therefore,

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103 BE IT RESOLVED, the Milwaukee County Board of Supervisors hereby
104 authorizes the Director, Department of Transportation (DOT), to continue with
105 implementation and operation of 11 Battery Electric Buses (BEBs) along the East-West
106 Bus Rapid Transit (BRT) route; and

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108 BE IT FURTHER RESOLVED, the DOT will implement a pilot program for BEBs
109 along the East-West BRT, with a report back in the first quarter of 2024; and

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111 BE IT FURTHER RESOLVED, replacement of aging buses with Clean Diesel
112 Buses (Clean Diesels) will continue until after the pilot program, and transition from
113 Clean Diesels to BEBs, and not use Hybrid Electric Buses as an interim transition
114 technology.

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