



Reliability Analysis Update

Transmission Expansion Advisory
Committee

April 11, 2019

- The following definitions explain the basis for excluding flowgates and/or projects from the competitive planning process and designating projects to the incumbent Transmission Owner.
- Flowgates/projects excluded from competition will include the underlined language on the corresponding slide.
 - Immediate Need Exclusion: Due to the immediate need of the violation (3 years or less), the timing required for an RTEP proposal window is infeasible. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(m)
 - Below 200kV Exclusion: Due to the lower voltage level of the identified violation(s), the driver(s) for this project are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(n)
 - FERC 715 (TO Criteria) Exclusion: Due to the violation need of this project resulting solely from FERC 715 TO Reliability Criteria, the driver(s) for this project are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(o)
 - Substation Equipment Exclusion: Due to identification of the limiting element(s) as substation equipment, the driver(s) for this project are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(p)



DAYTON/AEP Transmission Zone

Cost updates and New Sub ID needed for AEP portion of work for B1570, previously presented on 5/12/2011, 9/8/2011 TEAC

Original Project Description:

- B1570: Add a 345/69kV transformer at AEP Marysville 345kV bus
- B1570.1: Add/Reconductor Marysville 69kV – Darby 69kV
- B1570.2: Add/Reconductor Marysville 69kV – Union REA 69kV
- B1570.3: Reconductor Union REA 69kV – Honda MT 69kV

Original Total Project Cost: \$16 M

New Project Description:

- B1570: Add a 345/69kV transformer at Dayton's Peoria 345kV bus
- B1570.1: Add/Reconductor Peoria 69kV – Darby 69kV
- B1570.2: Add/Reconductor Peoria 69kV – Union REA 69kV
- B1570.3: Reconductor Union REA 69kV – Honda MT 69kV

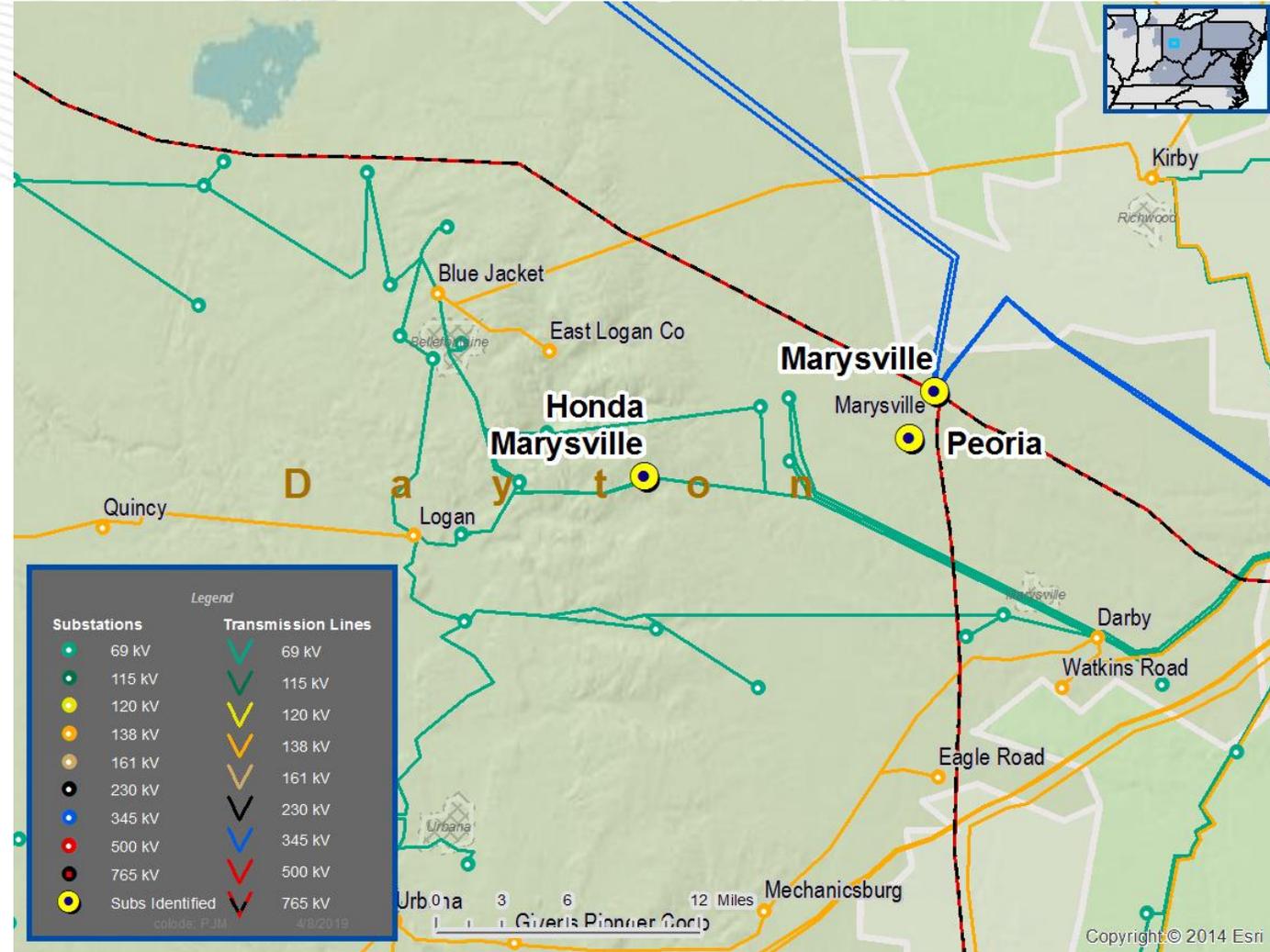
New Sub ID for AEP portion of work:

B1570.4: Add a 345kV breaker at Marysville 345kV station and a 0.1 mile 345kV line extension from Marysville to the new 345/69kV Dayton transformer Estimated Cost: **\$4.1M**

Note: No additional scope, it was part of the original B1570, but not broken-out into a separate Sub ID

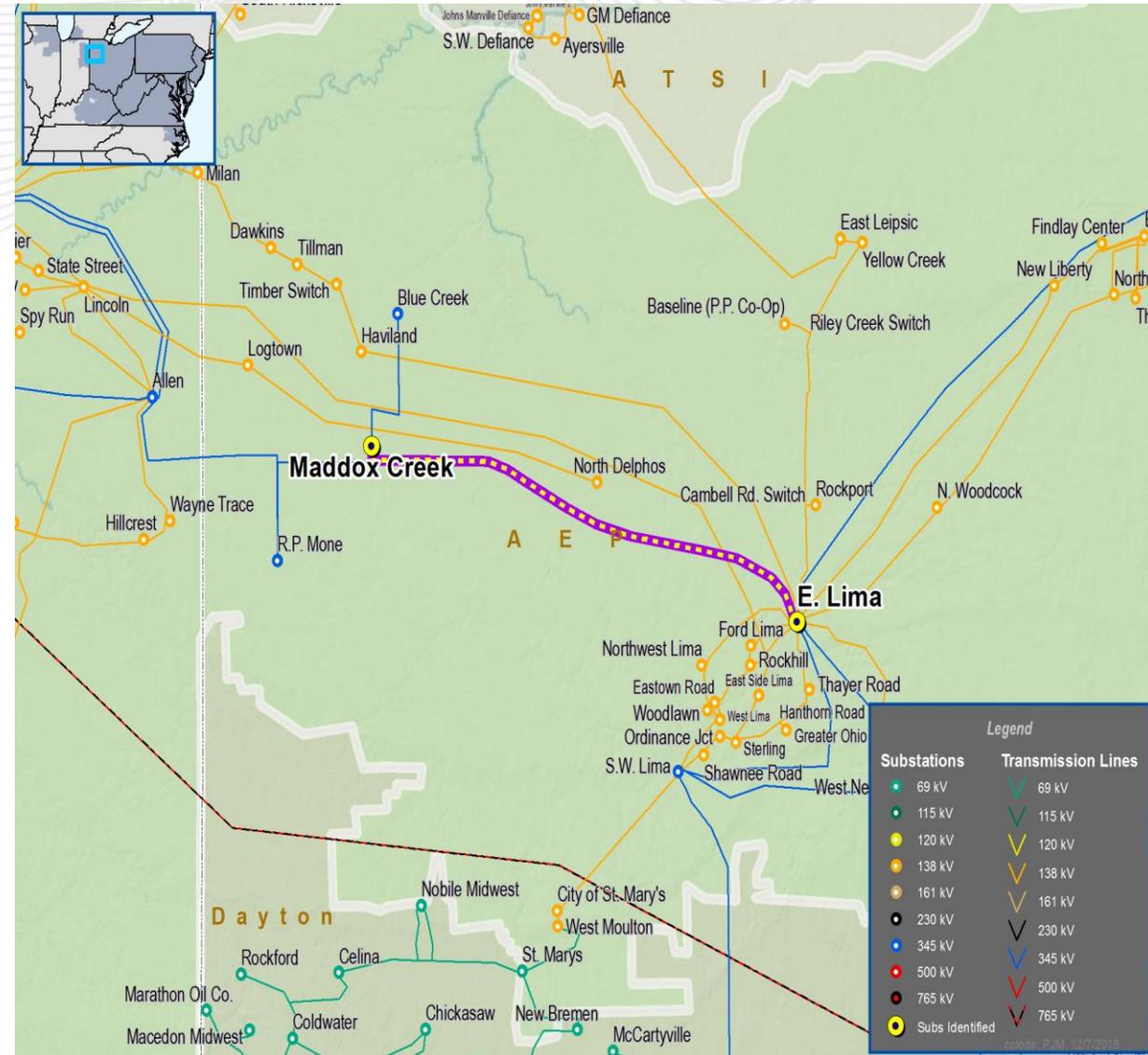
Updated cost for B1570, B1570.1, B1570.2 and B1570.3 is **\$16M**

Updated Total Project Cost: \$20.1M



Cost increase for B2833, previously presented on 1/12/2017 TEAC

- B2833: Reconductor the Maddox Creek to East Lima 345 kV circuit with 2-954 ACSS Cardinal conductor. (2016_3-4D)
- **Driver:**
 - Winter Generator Deliverability (FG# 123) in 2016 proposal window 3: Maddox Creek to East Lima 345 kV circuit is overloaded for single contingency loss of the Marysville – Sorenson 765 kV circuit.
- **Alternatives considered:**
 - 2016_3-3A (\$ 5.95 M)
 - 2016_3-4D (\$ 18.2 M)
 - 2016_3-4F (\$ 67.7 M)
 - 2016_3-4G (\$ 69.3 M)
 - 2016_3-7A (\$ 55.9 M)
- **Original Estimated Cost: \$18.2M**
- **New Estimated Cost : \$ 30.5M**
- **Reason for the Cost Increase:**
 - Access cost increased \$6M. Detailed project development and access plan review showed a much higher cost would be expected if traditional access roads were used to perform construction. Helicopter construction will be used as the more cost-effective approach to reduce need for mitigation of access roads and impact to property owners.
 - Labor and material cost for tower and hardware assemblies were updated, resulting in a \$6.3M increase.
- **Required IS Date: 12/1/2021**





2019 RTEP Analysis Update

- 2019 RTEP case build updates
- PJM continues to exercise cases
- 2019 window mid to late June opening

Dominion End of Life Criteria

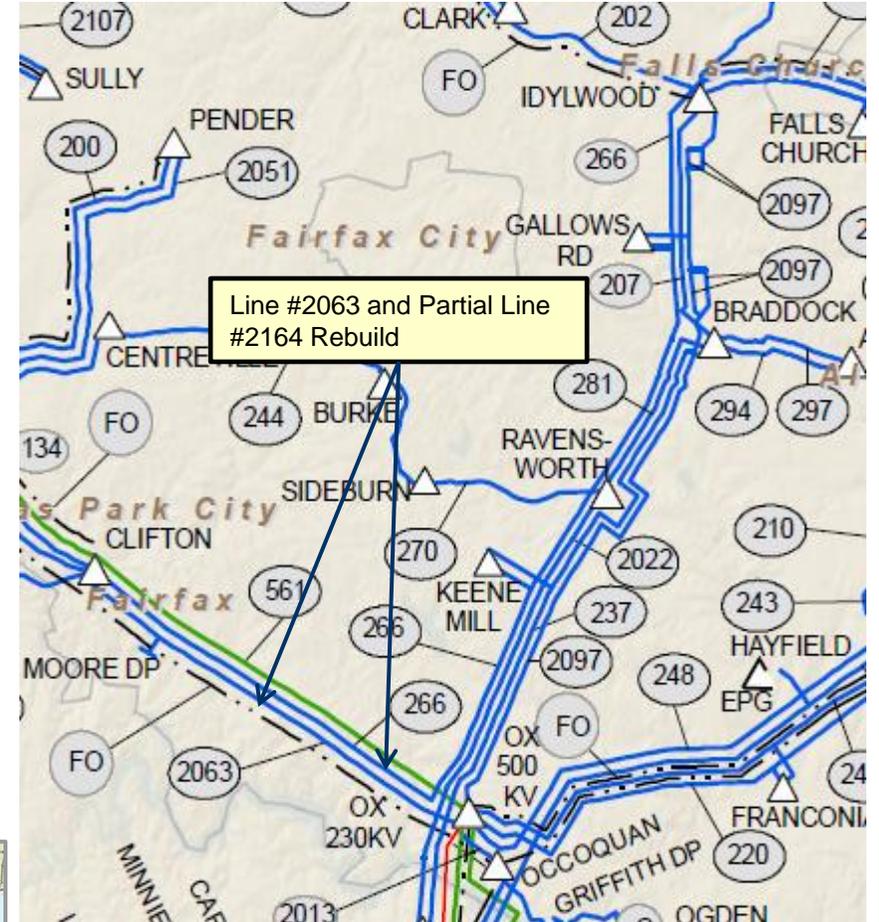
Baseline Reliability: TO Criteria Violation (FERC 715 (TO Criteria) Exclusion)

Problem Statement: Dominion “End of Life Criteria”

The 230kV Line #2063 from Clifton to Ox is roughly 7.16 miles long and was constructed on Cor-ten lattice-type double circuit towers in the 1960s. A roughly 7.1 mile long section of 230kV Line #2164 (currently Line #266) between Clifton and Keene Mill is on the same structures as Line #2063. These towers have been shown to have inherent corrosion problems that continuously deteriorate the steel members. These lines have been identified to be rebuilt as part of Dominion’s End of Life criteria.

Line #2164 is part of the network feed to Idylwood Substation supplying over 100 MW of load that is required to meet Dominion’s Transmission Planning Criteria. It has tapped load at Keene Mill Substation and Gallows Road Substation totaling 118 MW.

Line #2063 is the only source for the tapped load at Moore D.P.



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COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED





Dominion Transmission Zone: Baseline 230kV Line #2063 and Partial 230kV Line #2164 Rebuild

Recommended Solution:

Rebuild 230kV Line #2063 and Partial 230kV Line #2164 with double circuit steel structures using double circuit conductor at current 230kV northern Virginia standards with a minimum rating of 1200 MVA. **(b3096)**

Alternative:

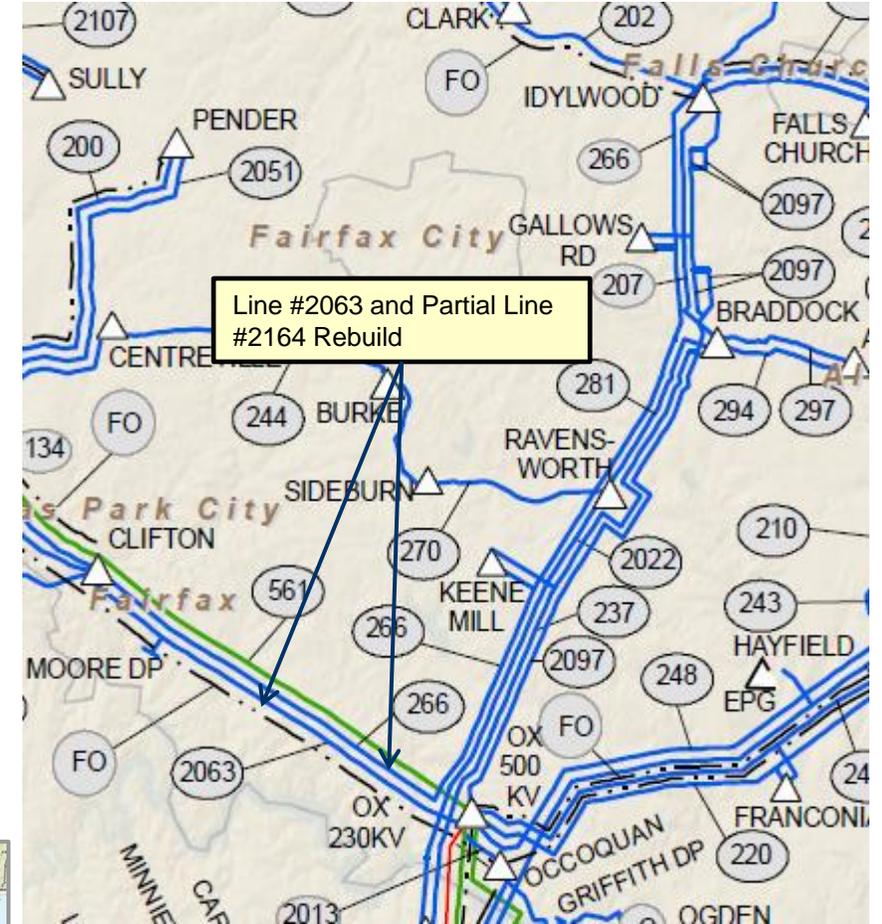
No feasible alternatives.

Estimated Project Cost: \$22.0 M

Required In-service Date: Immediate Need

Projected In-service Date: 12/31/2024

Project Status: Conceptual

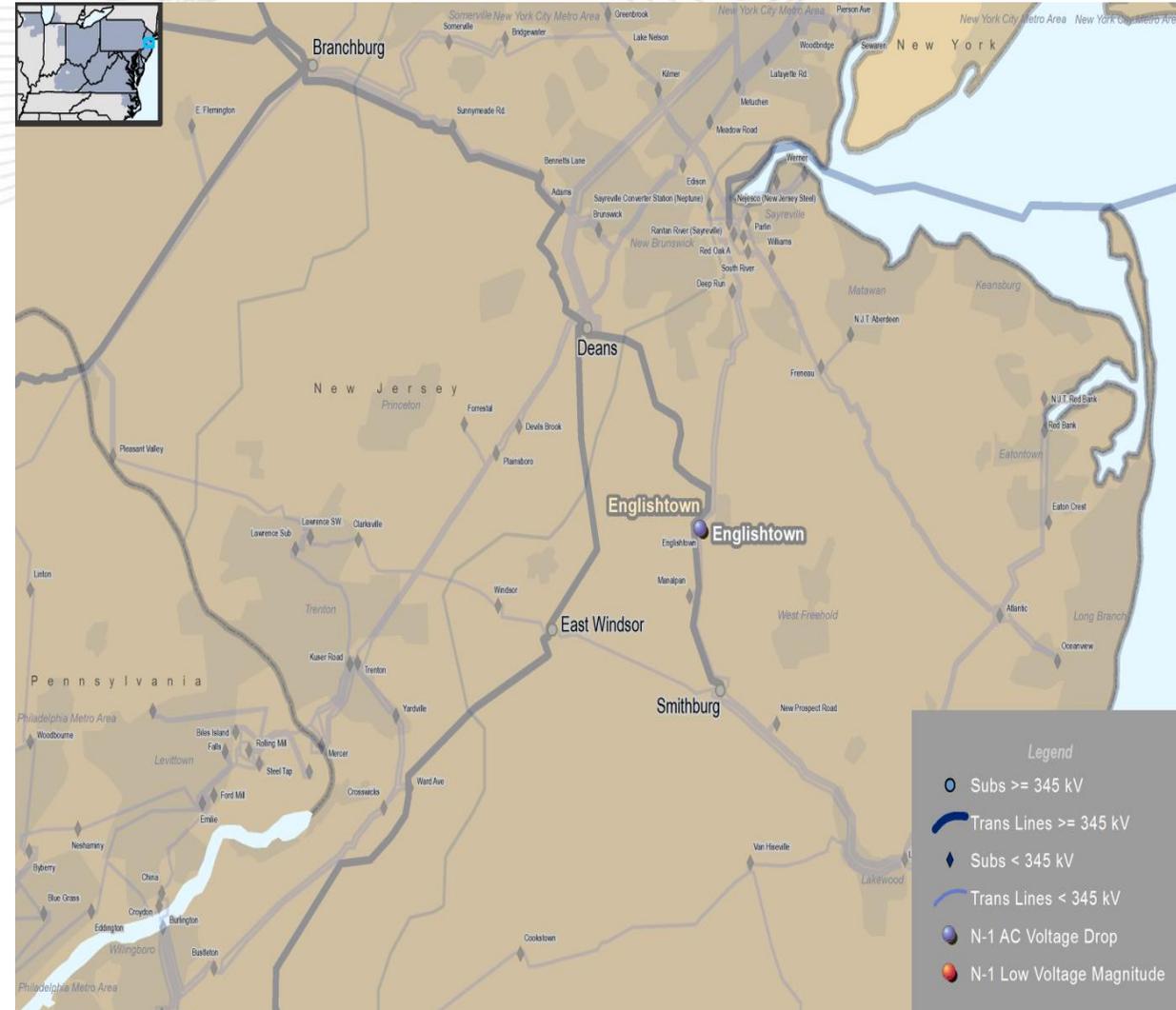


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Project Cancellation

- Cancellation of the B2676 project:
- The B2676 (Install one 72 MVAR fast switched capacitor at Englishtown 230 kV) was identified to mitigate voltage violation at Englishtown substation for N-1-1 condition in 2015.
- The upgrade is no longer required due to a lower load forecast and other Englishtown area upgrades.
- PJM performed all required analysis without the Englishtown 230 kV fast switched capacitor and didn't identify any issue.



- Continue testing case
- Target to provide preliminary analysis for stakeholder review in late April
- Targeting June for final results

Questions?



2019

- TEAC meetings are the following Thursdays in 2019
- **1/10, 2/7, 3/7, 4/11, 5/16, 6/13, 7/11, 8/8, 9/12, 10/17, 11/14, 12/12.**

- V1 – 04/05/2019 – Original Slides Posted
- V2 – 04/08/2019 – Add Slide #3 & 4