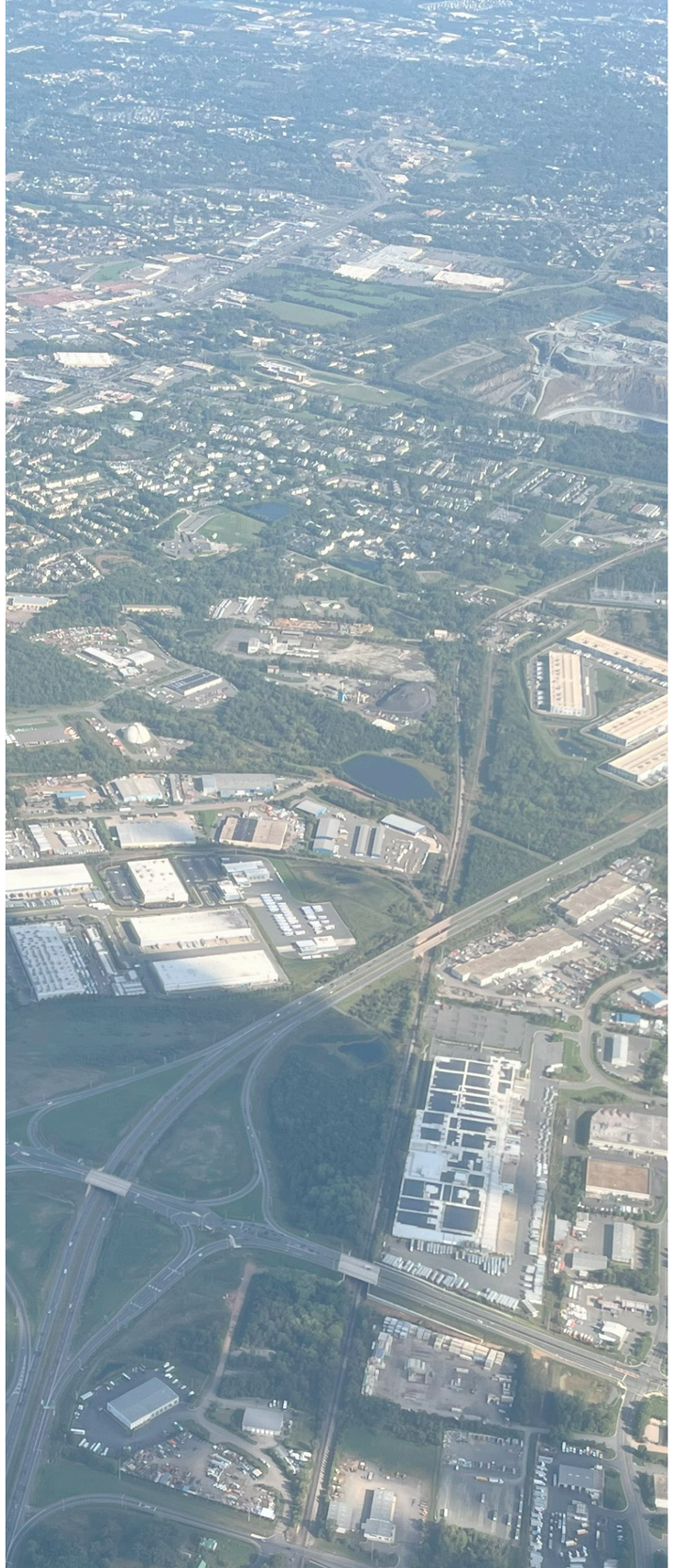
# DCSM & Z.O. UPDATE

## Task 6 DRAFT Recommendations 3.19.2025

# Presentation Outline



1. DCOAG Feedback Summary
2. Overview of updated recommendations
3. DCOAG Discussion Questions
4. Updated Schedule & Next steps

# DCOAG Feedback Summary

# DCOAG Feedback Summary

**Siting**
**Definition & Classification**
Setbacks / Separation
Bulk & Massing, Architectural Standards
Substations & Generators
Water
Power & Energy
Construction & Noise
Decommissioning & E-Waste
Other

## Siting

» Concern that the current process inadequately addresses how data centers are sited within the County.

» Request that siting be part of the Z.O. and DCSM update process so that all topics can be considered holistically.

## Definition & Classification

» Definition should reflect Data Centers as heavy industrial uses.

» Data Centers carry significant impacts and should not be classified as an office buildings.

» Address size, scale, and ancillary components (batteries, fuel storage, substations) in the definition.

# DCOAG Feedback Summary

Siting
Definition & Classification
**Setbacks / Separation**
Bulk & Massing, Architectural Standards
Substations & Generators
Water
Power & Energy
Construction & Noise
Decommissioning & E-Waste
Other

## Setbacks / Separation Distances

» The proposed setbacks are insufficient.

» Committee shared examples of noise/visual impacts from existing data centers, with one being 500’ from a neighborhood and still causing impacts, especially noise.

» Recommended setbacks: ¼ mile from residences, ½ mile from schools/state parks, 1 mile from national parks.

» Consider setbacks from wetlands, streams, and sensitive environmental areas.

# DCOAG Feedback Summary

Siting
Definition & Classification
Setbacks / Separation
**Bulk & Massing, Architectural Standards**
Substations & Generators
Water
Power & Energy
Construction & Noise
Decommissioning & E-Waste
Other

**Bulk & Massing, Architectural Standards**

- Rooftop equipment should be included in building height calculations.
- Height can also be impacted by grading. This should be addressed and considered in height calculations.
- Include data center size limitations.
- Architectural standards and regulation of building height (including rooftop equipment) is needed.
- Making nice looking data centers does not solve other impacts (noise, toxicity, power lines, etc).

# DCOAG Feedback Summary

Siting
Definition & Classification
Setbacks / Separation
Bulk & Massing, Architectural Standards
**Substations & Generators**
**Water**
Power & Energy
Construction & Noise
Decommissioning & E-Waste
Other

**Substations & Generators:**

» Concerns about safety and environmental impact of substations and generators such as fire risks, chemical storage, fuel storage (diesel), and emergency refueling.

» Suggested exploring alternative generator placement (inside buildings, underground).

**Water**

» Concerns with high water usage impacting available supply of potable water for County residents.

» Concerns about potential contamination from cooling chemicals.

» Advocated for closed-loop cooling and grey water use.

# DCOAG Feedback Summary

Siting
Definition & Classification
Setbacks / Separation
Bulk & Massing, Architectural Standards
Substations & Generators
Water
**Power & Energy**
**Construction & Noise**
Decommissioning & E-Waste
Other

**Power & Energy:**

» Transparency is needed regarding data center power sources (solar, coal) and origin.

» Regulation of substations is needed. These are often not shown until after zoning or site plan approval. Recommend burying power lines, "public necessity statements," and usage clauses.

**Construction & Noise:**

» Construction hours should be limited to standard business hours.

» Continuous perimeter noise monitoring and public reporting should be required.

» There is asbestos in County soil and potential for release during construction. This should be monitored and regulated.

# DCOAG Feedback Summary

Siting
Definition & Classification
Setbacks / Separation
Bulk & Massing, Architectural Standards
Substations & Generators
Water
Power & Energy
Construction & Noise
**Decommissioning & E-Waste**
**Other**

**Decommissioning / E-Waste:**

- Is reuse of data center sites after decommissioning even possible – toxic chemicals, underground fuel storage, etc. might make sites too toxic to reuse buildings.
- Data centers are continually upgrading equipment. E-waste management and decommissioning plans are needed

**Other Environmental:**

- Can regulations consider endangered species (e.g., tree-dwelling bats) and impacts on wildlife, including noise?
- Air quality (diesel fumes from generators) a major concern. Can air quality monitoring be included?
- Chesapeake Bay overlay language and RPA crossing/ encroachment issues have been noted during site plan review.

# DCOAG Feedback Summary

Siting
Definition & Classification
Setbacks / Separation
Bulk & Massing, Architectural Standards
Substations & Generators
Water
Power & Energy
Construction & Noise
Decommissioning & E-Waste
**Other**

## Other

- **Transparency:** Need much more transparency in development review process. NDAs are hindering disclosure of site design and environmental information. Use of bubble plans instead of detailed site designs during initial reviews is not acceptable. Disclosure of fuel and electrical requirements should also be required.
- **Lighting:** Need for lighting standards to reduce light impacts and impacts to night sky and wildlife should be considered.
- **Plan Review:** Review and catalog past development issues to avoid repetition.
- **Coordination:** Need close coordination between different regulatory requirements and agencies (e.g., water usage, emergency management, and hazardous waste).

# Task 6 | Z.O. & DCSM Draft Recommenations

# Task 6 | Draft Recommendations

Topics overview

**Administration / Organization**

Definitions

Application Requirements

Waivers

**Building & Site Standards**

Setbacks / Separation Distances

Building Height

Building Size

Lot Coverage, Open Space, Tree Canopy

Noise Impacts / Generators

Substations

Architecture / Screening

Lighting

**Operations**

Power / Energy

Water Supply

Hazardous Materials and Fire Safety

Decommissioning / E-Waste

Construction

# Administration / Organization

**Definitions**

Application Requirements

Waivers

- **Data Center:** A facility primarily used for storage, management processing and/or transmission of digital data and containing one or more large-scale computer systems and/or related equipment. Such facility may include the use of air handlers, water cooling and storage facilities, utility substations and infrastructure, back-up power generation, fire suppression systems, and/or enhanced security systems.
- **Data Center Campus:** A development consisting of multiple interconnected or co-located data center facilities on a single site or within a planned area.
- **Alternative Power Generation:** A system or facility that produces energy from other energy sources, including but not limited to nuclear and natural gas.  This definition encompasses all structures, equipment, and technologies used to harness these energy sources for the purpose of generating electricity or thermal energy. Such facilities may require special use approval to be utilized in certain zoning districts and may be subject to certain safety parameters.

# Administration / Organization

**Definitions**

Application Requirements

Waivers

- **Small-scale Data Center (Tier 1):** typically have minimal development impacts, generating low traffic, limited noise, with moderate power and cooling demands. These data centers are intended to be located no less than 200 feet from residential, park and school properties.
- **Medium scale Data Center (Tier 2):** have moderate development impacts, including increased power and cooling requirements, potential noise from backup generators and cooling systems, and increased site infrastructure demands. These facilities may require electric substations and high-capacity utilities. These data centers are intended to be located no less than 500 feet from residential, park and school properties
- **Large-scale Data Center (Tier 3):** have significant development impacts, including high energy consumption, substantial cooling and water usage, potential noise from large-scale mechanical systems, and traffic related to construction and maintenance. These facilities typically require electric substations, high-capacity utility infrastructure. These data centers are intended to be located no less than 1/4 mile from residential, park and school properties.

# Administration / Organization

Definitions

**Application Requirements**

Waivers

- Rezoning / Special Permit Applications must include: Detailed site plan and elevations showing building locations and ancillary equipment, including substations and generators.
- Visual Impact Analysis is required if DC buildings are within 1320 feet of residential-zoned, parks, and schools property lines to demonstrate screening and/or architectural elements.
- Certification from acoustical engineer that DCs meet all applicable noise requirements.

# Administration / Organization

Definitions

Application Requirements

**Waivers**

- A DC that meets Tier 3 Data Centers requirements for height and/or building size may reduce setbacks from residential zoned, parks, and school property lines if the following criteria are met:
  - Submittal of a visual impact analysis demonstrates that DCs will be screened from the residential-zoned, parks, and school property lines with the reduction in setback
  - Submittal of noise modeling demonstrates that the presence of the DC will not increase the ambient noise levels more than 2dB and will not exceed allowable maximum noise levels at all residential zoned, parks, and school property lines.
  - Setbacks may be reduced to a minimum of 500 ft
  - All other Tier 2 requirements would apply (except for building height and/or size)
- Height waivers will continue to be available through the existing Special Use Permit Process
- Other waivers for building height, building size, and setbacks are not permitted.

# Building & Site Design

## Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

Architecture / Screening

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| • Data Center buildings and any ancillary equipment must be set back a minimum of **200 feet** from all residential zoned, parks, and school property lines.<br><br>Other setbacks:<br>• 30 feet from any public street right-of-way.<br>• 15 feet from the side or rear of a lot when abutting another non-residential, non-school, non-park use. | • Data Center buildings and any ancillary equipment must be set back a minimum of **500 feet** from all residential zoned, parks, and school property lines.<br><br>Other setbacks:<br>• 30 feet from any public street right-of-way.<br>• 15 feet from the side or rear of a lot when abutting another non-residential, non-school, non-park use. | • Data Center buildings and any ancillary equipment must be set back a minimum of **1,320 feet (1/4 mile)** from all residentially zoned, parks, and school property lines.<br><br>Other setbacks:<br>• 30 feet from any public street right-of-way.<br>• 15 feet from the side or rear of a lot when abutting another non-residential, non-school, non-park use. |

# Building & Site Design

Setbacks

**Building Height + Building Size**

Lot Coverage

Noise

Generators

Substations

Architecture / Screening

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| Tier 1 Data Centers must comply with <u>all</u> of the following<br>• 45 ft max building height<br>• Height includes rooftop equipment and screening parapets<br>• 50,000 sq ft max building footprint per Tier 1 building | Tier 2 Data Centers must comply with <u>all</u> of the following<br>• 65 ft max building height<br>• Height includes rooftop equipment and screening parapets<br>• 100,000 sq ft max building footprint per Tier 2 building | Tier 3 Data Centers must comply with <u>all</u> of the following<br>• 85 ft max building height<br>• Height includes rooftop equipment and screening parapets<br>• No limits on Tier 3 DC building footprint |

# Building & Site Design

Setbacks

Building Height + Building Size

**Lot Coverage**

Noise

Generators

Substations

Architecture / Screening

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| • Buildings and ancillary equipment may cover no more than 60% of the DC campus<br>• 25% open space required<br>• Parking and ancillary equipment are not permitted in open space.<br>• 20% tree canopy at 10-year maturity. | • Buildings and ancillary equipment may cover no more than 70% of the DC campus.<br>• 20% open space required<br>• Parking and ancillary equipment are not permitted in open space.<br>• 15% tree canopy at 10-year maturity. | • Buildings and ancillary equipment may cover no more than 70% of the DC campus.<br>• 15% open space required<br>• Parking and ancillary equipment are not permitted in open space.<br>• 10% tree canopy at 10-year maturity. |

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

**Noise**

**Generators**

Substations

Architecture / Screening

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| • Demonstrate that ambient noise levels will not increase more than 2dB and must not exceed allowable maximum noise levels at all residential zoned, parks, and school property lines.<br>• All generators must be enclosed within a building.<br>• All mechanical equipment, both on ground and roof-mounted equipment, to include substations, must be attenuated through sound mitigation measures. | • Demonstrate that ambient noise levels will not increase more than 2dB and must not exceed allowable maximum noise levels at all residential zoned, parks, and school property lines.<br>• Generators must be fully screened from public street rights-of-way and located internal to the site.<br>• All exterior generators must be equipped with mufflers to mitigate noise.<br>• All mechanical equipment, both on ground and roof-mounted equipment, to include substations, must be attenuated through sound mitigation measures. | • Generators must be fully screened from public street rights-of-way and located internal to the site.<br>• All exterior generators must be equipped with mufflers to mitigate noise.<br>• All mechanical equipment, both on ground and roof-mounted equipment, to include substations, must be attenuated through sound mitigation measures. |

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

**Substations**

Architecture / Screening

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| • Substations must not locate within 300 feet of a residential-zoned, park, or school property line.<br>• Substations must be set back a minimum of 50 feet public rights-of-way and be screened from public rights-of-way and residential-zoned, parks, and school property lines.<br>• Where possible, substations should be located internal to the site and screened by data center buildings and located internal to the site. | • Substations must be fully screened from public rights-of-way and all residential-zoned, parks, and school property lines.<br>• Where possible, substations should be located internal to the site and screened by data center buildings and located internal to the site. | • Substations must be fully screened from public rights-of-way and all residential-zoned, parks, and school property lines.<br>• Where possible, substations should be located internal to the site and screened by data center buildings and located internal to the site. |

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

**Architecture / Screening**

Lighting

| Small Scale Data Center: Tier 1 | Medium Scale Data Center: Tier 2 | Large Scale Data Center: Tier 3 |
|---|---|---|
| • Any facade determined to be visible through visual impact analysis from a residential property line, school, park, or public right-of-way is considered a principal facade and must meet full architectural requirements of principal facades.<br>• Exterior cooling equipment must be ground located within a sound wall, and buffered in accordance with the DCSM. | • Any facade determined to be visible through the visual impact analysis from a residential property, school, park, or public right-of-way is considered a principal facade and must meet full architectural requirements of principal facades. | • Any facade facing and visible from a public right-of-way must meet the requirements of a principal facades. |

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

**Architecture / Screening**

Lighting

**Principal Facades:**

- Principal Facades are those that are oriented to a street and visible from the street and/or within 1/4 mile and visible from a residential-zoned, park, or school property line. A building can have multiple principal facades.
- Architectural Features: All principal facades must include at least 5 of the following architectural features: Overhang, Canopy or Portico, Recesses/ Projections, Arcade, Raised corniced parapets over the entrance, Tower Elements (at strategic locations), Variation in the roof line.
- Visitor and staff entrances and administrative offices must be along a principal facade and oriented towards the primary adjacent road.
- Loading docks and service entries of perimeter buildings must not face public rights-of-way and should be fully screened from adjacent residential, parks, and school property lines.
- On multi-building projects, loading docks must be oriented to face each other.
- Fenestration must comprise at least 30% of the total surface coverage area of all principal facades. Fenestration must be separated and distributed evenly vertically and horizontally across all principal facades.
- A minimum of 50% of the principal facade must consist of: Brick, Concrete (both precast and cast-in-place), Metal panels or anodized aluminum, Glazing Systems.

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

**Architecture / Screening**

Lighting

**Non-Principal Facades:**

- Non-Principal Facade are any data center facade that is not visible either from a public street or adjacent residential, school, or park land uses.
- All non-principal facades must be fully screened and buffered from adjacent public streets, residential, educational (schools), and recreational (parks) uses.
- The required screening and buffering must consist of a landscaping buffer that is entirely located within the boundaries of the data center property
- The screening buffer should be designed to fully obscure the non-principal facade from view from adjacent streets, residential, schools, and park uses.
- The buffer should include at a minimum Type C buffer standards and screening should be demonstrated with elevations and line of site visuals.
- Buffering requirements apply to any ancillary equipment, uses, or manmade features on site such as generators, substations, fuel storage, loading docks, and parking areas.
- If buildings are within 1320 feet of residential zoned, parks, and schools property lines, a visual impact analysis must be included in the site plan to demonstrate screening.

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

**Architecture / Screening**

Lighting

**Mechanical Equipment/Substations:**

- All on-site, exterior equipment, including substations and generators must be internal to the building or screened with an opaque wall similar **in appearance and construction to the principal building** in addition to the landscaping / buffering requirements.
- Rooftop equipment must be screened by parapets.
- Ground level mechanical equipment must not be located in any required yard or required open space area, and included in lot coverage calculations.
- Screening of ground-level and rooftop mechanical equipment must be required to be at a minimum the height of the equipment.
- Substations screening may be less in height if visual impact analysis demonstrates sufficient screening.

# Building & Site Design

Setbacks

Building Height + Building Size

Lot Coverage

Noise

Generators

Substations

Architecture / Screening

**Lighting**

**Lighting**

- Unless required for security purposes, all non-essential lighting must be dimmed by 50% or turned off between 11:00PM and 5:00AM.
- Adjacent to residential properties:
  - Light poles within 500ft of a residential area must not exceed 20ft in height
  - Glare shields are required for any fixture that is visible from a residential property
- Adjacent to agricultural lands:
  - Outdoor lighting must be warm colored (2700-3000k)
  - Lighting must be timed or motion activated if within 500ft of an agricultural property.

# Operations

## Power / Energy

Water Supply

Hazardous Materials and Fire Safety

Decommissioning / E-Waste

Construction

- Require an electrical use plan* be submitted during the permitting process to be reviewed by planning staff showing what portions, types of energy, and percentage of each type will be utilized. The plan must also show the locations of these sources, the maximum electrical demand for the site, and the assumed demand relative to the overall regional network.
- All new power lines including distribution lines and substation and transmission feeder lines are required to be placed underground.
- Require use of recycled water or air chillers for cooling where possible. Require as part of the water study to show impacts of potable water usage on local water supply.
- Encourage the use of renewable energy. Allow for exemptions from height restrictions and maximum impervious coverage requirements specifically for renewable energy facilities.
- Encourage commitment to a PUE (Power Usage Effectiveness, essentially a measure of how efficiently a data center uses its energy) of 1.5 or less.
- Require buildings to meet the standards of the LEED Certification (standard administered by US Green Building Council).
- County develops an electrical plan to determine allocations allowed to specific industries and types of development.

**requirement of electrical use plan is subject to County Attorney review for consistency with state enabling legislation*

# Operations

Power / Energy

**Water Supply**

Hazardous Materials and Fire Safety

Decommissioning / E-Waste

Construction

- Consider requesting PWW and UOSA to undertake a "Study" to develop and extend a "re-use" water system for use by data centers throughout the County, requiring data centers to "participate" in the study and "obligate" offsite improvements, extensions and connections to be paid for by the DC developments.
- Prohibit the use of onsite private water well systems to service data center developments.
- Consider restrictions on use of private groundwater wells to service geothermal cooling systems for data centers.
- Consider new requirement for all data center developments (and large scale water users) to submit a Water Usage Study for review and acceptance by Prince William Water prior to rezoning or site plan approval; identifying level of demand, maximum daily usage projections, best practices and water management strategies, cooling system design, potable vs non-potable water sources, recirculation and reuse, onsite pretreatment of effluent and water usage effectiveness.
- Considerations for onsite storage, treatment and re-use requirements of potable water sources for DC developments.
- Prohibit the use of private onsite sewage disposal systems to service data centers.

# Operations

Power / Energy

Water Supply

**Hazardous Materials and Fire Safety**

Decommissioning / E-Waste

Construction

- Require a hazardous inventory report during the permitting process, as well as yearly to be due on the 1st of January. This includes: Types and quantities stored; Inspection and monitoring records; Summary of any spills and correct actions
- Hazardous Materials Storage must be shown on site plan.
- Primary Hazardous Storage Areas must be located at least:
  - 750 ft from any surface water body (streams, rivers, lakes, reservoirs).
  - 2000 ft from any municipal water supply intake or public groundwater well.
  - 250 ft from any wetland, 100-year floodplain, or intermittent stream.
- If hazardous materials are stored within 1000ft of any body of water, they must install a stormwater collection and filtration system
- If hazardous materials are stored within 1000ft of any body of water, they must install groundwater monitoring wells. These wells must be tested quarterly for contaminants, with records submitted as part of the hazardous inventory report.
- No hazardous materials may be stored within 2500 ft of a threatened species habitat.
- Outdoor hazardous storage areas must be covered or enclosed to prevent rainwater infiltration and runoff contamination.
- Facilities must submit a spill response plan to PWC Emergency Services, and conduct a quarterly emergency spill drill with records submitted to PWCES.

# Operations

Power / Energy

Water Supply

Hazardous Materials and Fire Safety

**Decommissioning / E-Waste**

Construction

- Require a decommissioning plan be submitted during site plan review and reviewed by PWC PW to show how this site after it has ceased use will be returned to a neutral state, that is one that can be easily taken over by similar uses. Hazardous materials would need to be cleaned up and disposed of properly according to DEQ standards.
- All unwanted used electronic equipment must be disposed of by an accredited certified recycler consistent with EPA and DEQ guidance.

# Operations

Power / Energy

Water Supply

Hazardous Materials and Fire Safety

Decommissioning / E-Waste

# Construction

- Requirement for data centers to include construction and truck traffic analysis in their TIAs
- Expand 750.02C to include a provision that all data center projects/owners submit a stormwater, erosion control and pollution prevention plan; including posting conservation escrows and securing a grading permit **for all temporary offsite hauling and disposal sites** disturbing in excess of 2500 sf, regardless of agricultural status, prior to onsite and offsite grading activities.
- Amend 750.01 A to , including offsite borrow and disposal sites located in the Agricultural zoning district,
- Amend 750.01 A or add subsection 750.01 E to include that all erosion and sediment control plans submitted for offsite borrow and disposal sites used in conjunction with data center developments must consider **Time of Day Restrictions** reducing PM time before 10 PM and adding construction vehicle (hauling and disposal trucks) restrictions after dark and require a Construction Truck Routing plan (including roadway routes, hours of operation, temporary pull-off areas, disposal sites, etc) in combination with the site plan approval.
- Consideration for surface grading, berms or other structural spill containment  or pollution prevention measures around fuel and chemical storage tanks.
- Consider requirements for an **Emergency Preparedness Plan**; Spill Prevention, Containment/ Control and Countermeasures

# DCOAG Discussion

# Questions

# DCOAG Discussion Questions

- Is the DCOAG feedback summary accurate? Are there major themes that we missed or didn't capture accurately?
- Do the updated recommendations address the DCOAG feedback to-date? If not, where is there misalignment?
- What questions do you have for the Moseley team?
- What topics would you like further discussion on at the next meeting?

# Next Steps & Updated Schedule

# Next Steps

- Moseley team will meet with the DCOAG on April 9 & April 16
- During the April meetings, we hope to focus on topics that DCOAG members have questions about and/or want further discussion on.
- We will host a community meeting in May or June to gather community input on the draft ordinance recommendations.

# Project Phasing (Updated)

## Listen & Learn

### Jul 2024 - Nov 2024

T1. Project Kick-off with Advisory Group

T2. County Ordinance and State Statutory Framework Review

T3. Best Practices Review

T4. Prepare Outline of Potential Additions or Changes to DCSM/ZO

T5. ~~First Community Engagement Meeting~~

Ongoing Project Management & Quality Assurance:
Staff check in-calls, meeting agendas and minutes, progress reports, website materials, etc.

## Initial Recommendations

### March 2025 - June 2025

T6. Initial Draft DCSM and Zoning Ordinance

T7. Second Community Engagement Meeting(s)

T8. Prepare Staff Materials and present to DORAC and CDC

## County Officials & Final Documents

### July 2025 - Feb 2026

T9. Prepare Staff Materials for the Planning Commission Work Session

T10. Planning Commission Work Session

T11. Prepare for Planning Commission Public Hearing for Final DCSM/Zoning Ordinance

T12. Planning Commission Public Hearing for Final DCSM/Zoning Ordinance

T13. Prepare Staff Materials for the Board of County Supervisors Work Session

T14. Board of County Supervisors Work Session

T15. Final Recommendation for the Board of County Supervisors and Public Hearing Preparation

T16. Board of County Supervisors Public Hearing for Final DCSM/Zoning Ordinance

T17. Project Completion

# PROJECT SCOPE & SCHEDULE (Updated)