



Arlington County Water Pollution Control Plant

Arlington Re-Gen

Biosolids Advisory Panel

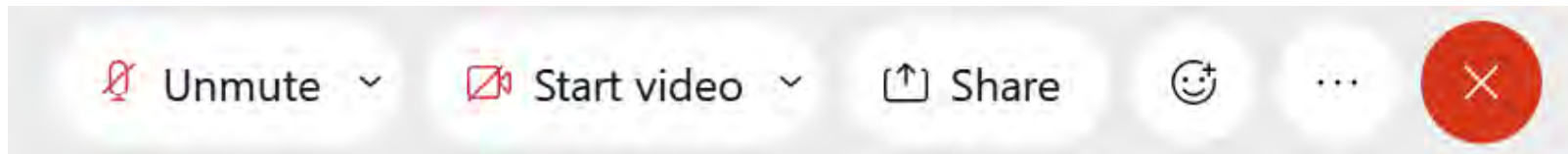
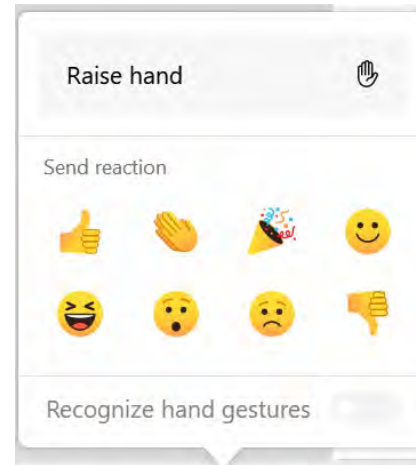
Envision Subcommittee Meeting

October 18, 2023

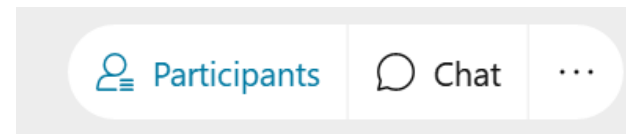
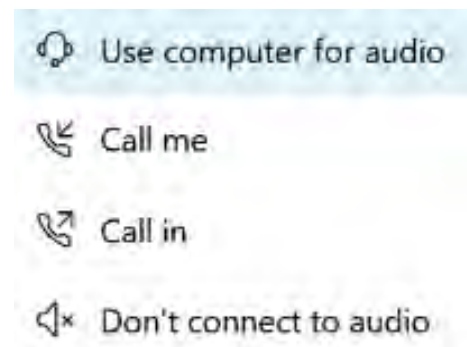


Meeting Logistics

WEBEX CONTROLS



MEETING PREVIEW AUDIO SELECTION



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Agenda

- 01** 5:30 – 5:35 Introductions
- 02** 5:35 – 5:45 Envision Refresher
- 03** 5:45 – 7:15 Envision Credit Review
- 04** 7:15 – 7:30 Next Steps

Introduction

**Mary
Strawn**

Arlington County Water
Pollution Control Bureau

**Brian
Balchunas**

HDR

**Stephanie
Spalding**

HDR

Jen Ninete

HDR

**Rahkia
Nance**

HDR

**Melanie
Deggins**

HDR



02

Envision Refresher and Current Status



Quality of Life

Well-being ♦ Mobility ♦ Community



Leadership

Collaboration ♦ Planning ♦ Economy



Resource Allocation

Materials ♦ Energy ♦ Water



Natural World

Siting ♦ Conservation ♦ Ecology



Climate & Resilience

Emissions ♦ Resilience

Program Sustainability Goals with Envision Alignment

County Goals Facility Goals

   	Reduce operating costs		
  	High-performing and efficient project		
 	Support staff and community health		
    	Environmental, economic, and social stewardship		
    	Carbon-neutral by 2050		
  	Open, transparent, and collaborative process		
    	Class A biosolids and biogas for renewable energy		

Envision Credits and Points

Categories	# Credits	Max Points
Quality of Life	13	200
Leadership	11	182
Resource Allocation	13	196
Natural World	13	232
Climate & Resilience	9	190
Totals	59	1,000

Category Summary – Current Status

Category	Max Points	Applicable Points*	Low Estimate	%	High Estimate	%
Quality of Life	200	182	106	58%	121	66%
Leadership	182	182	135	74%	150	82%
Resource Allocation	196	196	81	41%	83	42%
Natural World	232	100	35	35%	35	35%
Climate & Resilience	190	174	96	55%	127	73%
Total	1000	834	453	54.3%	516	61.9%

Envision Recognition Levels





03

Envision Credit Review

Quality of Life Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Not Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER		LEVEL OF ACHIEVEMENT					
QUALITY OF LIFE	PURPOSE	QL1.1 Improve Community Quality of Life	0	0	2	5	10	20	26
		QL1.2 Enhance Public Health and Safety	0	0	2	7	12	16	20
		QL1.3 Improve Construction Safety	0	0	2	5	10	14	-
		QL1.4 Minimize Noise and Vibration	0	0	1	3	6	10	12
		QL1.5 Minimize Light Pollution	0	0	1	3	6	10	12
		QL1.6 Minimize Construction Impacts	0	0	1	2	4	8	-
	WELLBEING	QL2.1 Improve Community Mobility and Access	0	0	1	3	7	11	14
		QL2.2 Encourage Sustainable Transportation	0	0	-	5	8	12	16
		QL2.3 Improve Access and Wayfinding	0	0	1	5	9	14	-
	COMMUNITY	QL3.1 Advance Equity and Social Justice	0	0	3	6	10	14	18
		QL3.2 Preserve Historic and Cultural Resources	-18	0	-	2	7	12	18
		QL3.3 Enhance Views and Local Character	0	0	1	3	7	11	14
		QL3.4 Enhance Public Space and Amenities	0	0	1	3	7	11	14
		QL0.0 Innovation (earn up to 8 points)		2					
Maximum QL Points					200		182		
Excluded (n/a)					-18				
High					121		66.5%		
Low					106		58.2%		

Leadership Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Not Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER		LEVEL OF ACHIEVEMENT					
LEADERSHIP	COLLABORATION	LD1.1 Provide Effective Leadership and Collaborati	0	0	2	5	12	18	-
		LD1.2 Foster Collaboration and Teamwork	0	0	2	5	12	18	-
		LD1.3 Provide for Stakeholder Involvement	0	0	3	6	9	14	18
		LD1.4 Pursue Byproduct Synergies	0	0	3	6	12	14	18
	PLANNING	LD2.1 Establish a Sustainability Management Plan	0	0	4	7	12	18	-
		LD2.2 Plan for Sustainable Communities	0	0	4	6	9	12	16
		LD2.3 Plan for Long-Term Monitoring and Maintena	0	0	2	5	8	12	-
		LD2.4 Plan for End-of-Life	0	0	2	5	8	14	-
	ECONOMY	LD3.1 Stimulate Economic Prosperity and Develop	0	0	3	6	12	20	-
		LD3.2 Develop Local Skills and Capabilities	0	0	2	4	8	12	16
LD3.3 Conduct a Life-Cycle Economic Evaluation		0	0	5	7	10	12	14	
		LD0.0 Innovation (<i>earn up to 6 points</i>)		6					
			Maximum LD Points			182	182		
			Excluded (n/a)			0			
			High			150	82.4%		
			Low			135	74.2%		

Resource Allocation Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Not Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER		LEVEL OF ACHIEVEMENT					
RESOURCE ALLOCATION	MATERIALS	RA1.1 Support Sustainable Procurement	0	0	3	6	9	12	-
		RA1.2 Use Recycled Materials	0	0	4	6	9	16	-
		RA1.3 Reduce Operational Waste	0	0	4	7	10	14	-
		RA1.4 Reduce Construction Waste	0	0	4	7	10	16	-
		RA1.5 Balance Earthwork On Site	0	0	2	4	6	8	-
	ENERGY	RA2.1 Reduce Operational Energy Consumption	0	0	6	12	18	26	-
		RA2.2 Reduce Construction Energy Consumption	0	0	1	4	8	12	-
		RA2.3 Use Renewable Energy	0	0	5	10	15	20	24
		RA2.4 Commission and Monitor Energy Systems	0	0	3	6	12	14	-
	WATER	RA3.1 Preserve Water Resources	0	0	3	5	7	9	12
		RA3.2 Reduce Operational Water Consumption	0	0	4	9	13	17	22
		RA3.3 Reduce Construction Water Consumption	0	0	1	3	5	8	-
		RA3.4 Monitor Water Systems	0	0	1	3	6	12	-
			RA0.0 Innovation (earn up to 9 points)		4				
Maximum RA Points					196		196		
Excluded (n/a)					0				
High					83		42.3%		
Low					81		41.3%		

Natural World Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Not Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER		LEVEL OF ACHIEVEMENT					
NATURAL WORLD	SITING	NW1.1 Preserve Sites of High Ecological Value	-22	0	2	6	12	16	22
		NW1.2 Provide Wetland and Surface Water Buffers	-20	0	2	5	10	16	20
		NW1.3 Preserve Prime Farmland	-16	0	-	2	8	12	16
		NW1.4 Preserve Undeveloped Land	0	0	3	8	12	18	24
	CONSERVATION	NW2.1 Reclaim Brownfields	-22	0	11	13	16	19	22
		NW2.2 Manage Stormwater	0	0	2	4	9	17	24
		NW2.3 Reduce Pesticide and Fertilizer Impacts	0	0	1	2	5	9	12
		NW2.4 Protect Surface and Groundwater Quality	0	0	2	5	9	14	20
	ECOLOGY	NW3.1 Enhance Functional Habitats	-18	0	2	5	9	15	18
		NW3.2 Enhance Wetland and Surface Water Function	-20	0	3	7	12	18	20
		NW3.3 Maintain Floodplain Functions	-14	0	1	3	7	11	14
		NW3.4 Control Invasive Species	0	0	1	2	6	9	12
		NW3.5 Protect Soil Health	0	0	-	3	4	6	8
			NW0.0 Innovation (earn up to 8 points)		0				
		Maximum NW Points				232	100		
		Excluded (n/a)				-132			
		High				35	35.0%		
		Low				35	35.0%		

Climate and Resilience Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Not Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER		LEVEL OF ACHIEVEMENT					
CLIMATE & RESILIENCE	EMISSIONS	CR1.1 Reduce Net Embodied Carbon	0	0	5	10	15	20	-
		CR1.2 Reduce Greenhouse Gas Emissions	0	0	8	13	18	22	26
		CR1.3 Reduce Air Pollutant Emissions	0	0	2	4	9	14	18
	RESILIENCE	CR2.1 Avoid Unsuitable Development	-16	0	3	6	8	12	16
		CR2.2 Assess Climate Change Vulnerability	0	0	8	14	18	20	-
		CR2.3 Evaluate Risk and Resilience	0	0	11	18	24	26	-
		CR2.4 Establish Resilience Goals and Strategies	0	0	-	8	14	20	-
		CR2.5 Maximize Resilience	0	0	11	15	20	26	-
		CR2.6 Improve Infrastructure Integration	0	0	1	5	9	13	18
		CR0.0 Innovation (earn up to 5 points)		2					
Maximum CR Points (w/o Innovation)					190		174		
Excluded (n/a)					-16				
High					127		73.0%		
Low					96		55.2%		

Metric: How the credit will be measured

Performance Improvement

Getting to the next LOA

Related Credits

Evaluation Criteria & Documentation
Criteria questions with potential documentation sources noted beneath. Provide sufficient documentation to answer the criteria questions and demonstrate achievement

QL3.3 Enhance Views and Local Character

Conserving A+B+C+D+E – 11 pts

- A. The project team identifies community values and concerns regarding protection and enhancement of views and local character.
- B. Specific design features preserve or enhance views and local character, and are informed by the stakeholder consultation process.
- C. Guidelines are adopted or developed to preserve or enhance views and local character. The aesthetic quality of the project is important.
- D. A construction management plan protects character features, high value landscapes, or landscape features during construction.
- E. Community feedback from the stakeholder engagement process verifies actions taken in criteria A, B, and C.

In DB requirements

Criterion D would need to be added to DB requirements.

Would a Conserving LOA be possible due to screening wall?

Stakeholder groups have communicated that they don't want more of an industrial look. Screening walls will be included to limit impact. Plant is mentioned in public art masterplan; may be required to include public art.

QL3.3 Enhance Views and Local Character

Conserving A+B+C+D+E – 11 pts

E. Does the community support actions taken to preserve or enhance views and local character?

1. Documentation that the stakeholder engagement process specifically addressed issues of views and local character. Documentation should include evidence of stakeholder engagement in two key areas:
 - a. The identification of important views and elements of local character per criterion A.
 - b. Approving or informing design features or guidelines to preserve or enhance views and local character per criteria B and C.

Note that the aesthetic quality of a project is highly subjective. Project teams should seek to provide honest reporting of both supporting and dissenting opinions on the project. Assessment is not based on unanimous support but rather on whether stakeholders were meaningfully engaged and given the opportunity to voice their acceptance or concerns.

RA1.2 Use Recycled Materials

At Improved 5%
Consider higher LOA
Enhanced 15%
Superior 25%
Conserving 50%

- A. At least **X%** (by weight, volume, or cost) of recycled materials including **materials with recycled content** and/or **reused existing structures or materials**.

In DB requirements;
would need to update
% if changed

Decide about calculating by weight or cost. Estimate cost to demo and rebuild gravity thickeners + other recycled content - steel, what type of concrete?

Ensure quality and cost implications of specifying recycled materials.

***Mechanical, electrical, water equipment, and their components may be excluded from the calculations. In these instances, the most efficient equipment should be specified.*

LEED Energy Credits

- Prerequisite: Minimum Energy Performance

Intent: To reduce the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

- Prerequisite: Building-Level Energy Metering

Intent: To support energy management and identify opportunities for additional energy savings by tracking building-level energy use.

- Credit: Optimize Energy Performance

Intent: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.

Envision Energy Credits

- RA2.1 Reduce Operational Energy Consumption

Intent: Conserve energy by reducing overall operational energy consumption throughout the project life.

- RA2.2 Reduce Construction Energy Consumption

Intent: Conserve resources and reduce greenhouse gases and air pollutant emissions by reducing energy consumption during construction.

- RA2.4 Commission and Monitor Energy Systems

Intent: Ensure efficient functioning and extend useful life by specifying commissioning and monitoring of energy systems.

LEED Carbon and Emissions-related Credits

- Green Power and Carbon Offsets

Intent: To encourage the reduction of greenhouse gas emissions through the use of grid-source, renewable energy technologies and carbon mitigation projects.

- Fundamental Refrigerant Management

Intent: To reduce stratospheric ozone depletion.

- Renewable Energy Production

Intent: To reduce the environmental and economic harms associated with fossil fuel energy by increasing self-supply of renewable energy.

Envision Carbon and Emissions-related Credits

- RA2.3 Use Renewable Energy

Intent: Meet operational energy needs through renewable energy sources.

- CR1.1 Reduce Net Embodied Carbon

Intent: Reduce the impacts of material extraction, refinement/manufacture, and transport over the project life..

- CR1.2 Reduce Greenhouse Gas Emissions

Intent: Reduce greenhouse gas emissions during the operation of the project, reducing project contribution to climate change.

RA1.1 Support Sustainable Procurement Practices

LOA?
Improved 5% | Enhanced 15%
Superior 25%

- A. A written **sustainable procurement policy/program** is in place. The program includes a **well-defined process for selecting suppliers and/or manufacturers** of materials, supplies, and equipment, including **selection criteria focused on environmental practices and social responsibility**.
- B. At least **X%** of all project materials, supplies, and equipment meet the sustainable procurement policy/program requirements.

Criteria would need to be added to DB requirements.

Commitments to identify and select manufacturers and/or suppliers that implement sustainable practices.

RA1.3 Reduce Operational Waste

Conserving
At least 75% diversion
14 pts

- A. Develop an **operational waste management plan** that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on site or commingled.
- B. The project team identifies waste streams or byproducts that will occur as a result of the operation of the project.

DB requirements:
Provide input as
requested

The project is planned or designed to divert at least 75% of operational waste. Diversion may be a combination of waste reduction measures and/or sourcing waste to other facilities for recycling or reuse.

Operational waste management plan – from county, facility, or developed for this project?

Formally define waste that would go to landfill and discuss calculation

RA1.4 Reduce Construction Waste

Superior > 75% diversion
10 pts

- A. Implement a **construction waste management plan** that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on site or commingled.
- B. The project team sets a target goal for construction waste diversion.
During construction at least **75%** of waste materials are recycled, reused, and/or salvaged. Diversion may be a combination of waste-reduction measures and sourcing waste to other facilities for recycling or reuse.

In DB requirements;
would need to update
% if changed

Reuse of gravity thickeners
will also contribute to
diversion as well as
recycled content/reuse and
embodied carbon.

Discussion about feasible diversion.
Consider demo of Bio-building due to asbestos.



RESOURCE ALLOCATION: ENERGY

RA2.1 Reduce Operational Energy Consumption

Improved – 6 pts

A+B

>10% (<30%)

26

POINTS

INTENT

Conserve energy by reducing overall operational energy consumption throughout the project life.

DESCRIPTION

This credit addresses the important need to reduce overall energy consumption. Energy generation is the primary source of greenhouse gas emissions and numerous other pollutants harmful to the environment and human health. While use of renewable energy reduces impacts, the primary goal of all projects should be to minimize the overall energy consumed as much as possible.

There are significant and compounding cost savings to reducing operational energy use. Project teams should take a whole-systems design approach when considering options in order to maximize achievement. While single actions like replacing fluorescent lights with light emitting diodes (LEDs) are a positive first step, large energy savings can be achieved when considering project alternatives and the design of major energy consuming systems.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR
A + B	A + B	A + B
(6) 10% Energy Reduction	(12) 30% Energy Reduction	(18) 50% Energy Reduction

(A) The project team determines the estimated annual energy consumption of the project. If annual energy consumption varies, the project team submits the range of estimated performance over the project life.

(B) Operational energy is reduced at least 10%.

(B) Operational energy is reduced at least 30%.

(B) Operational energy is reduced at least 50%.

(B) Operational energy is reduced at least 70%.

ISI provides a calculator. This credit looks at all fuels, including truck fuel, natural gas and electricity.



RA2.2 Reduce Construction Energy Consumption

Documentation that the project has implemented, or has policies to implement, energy conservation strategies during construction. Strategies that meet the credit requirements include:

- a. Tier IV construction equipment or Tier III with Best Available Technology (BAT) for at least 75% of non-road equipment fleet greater than 50 horsepower;*
- b. Alternative fuels in heavy equipment such as biodiesel for at least 5% of total fuel consumption;*
- c. Hybrid or fully electric project vehicles for at least 50% of fleet;*
- d. Electrified equipment for at least 20% of equipment (vs. gas or diesel engines);*
- e. Employee commuting programs with incentives (shuttles to transit, ride-share programs, biking facilities, etc.);*
- f. Reduce purchased energy for workstations (construction trailer/ office energy) by 30% for two of the following: (1) lighting; (2) HVAC; (3) plug loads;*
- g. Purchase green power (RECs) for 30% of workstation energy consumption;*
- h. Offset electrical consumption by generating 5% renewable energy on site (e.g., solar panels on trailer complex, solar-powered temporary light plant, solar-powered cameras and variable message sign boards); and*
- i. Reduce overall fuel consumption by 10% through improved planning and logistics. Specific strategies may include:*
 - i. Reduce number of deliveries;*
 - ii. Reduce idle times;*
 - iii. On-site reuse of soils or other materials to decrease truck traffic to and from site (ties into Reduced Excavated Material taken off site);*
 - iv. Reduce on-site trucking – proper logistics planning such as staging material in close proximity to installation location;*
 - v. Schedule acceleration without additional resource consumption;*
 - vi. Waterborne/rail transportation of materials versus trucking (third-party distribution or logistics);*
 - vii. On-site plants (concrete plant/asphalt plant) in lieu of trucking material to the site; and*
 - viii. Prefabrication of design elements.*



RA2.3 Use Renewable Energy

24

POINTS

INTENT

Meet operational energy needs through renewable energy sources.

METRIC

Extent to which renewable energy sources are incorporated.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
A	A	A	A	A
(5) At Least 5%	(10) At Least 15%	(15) At Least 30%	(20) At Least 50%	(24) Net Positive
(A) The project meets: 5% of energy needs (electricity and fuel) from renewable sources.	(A) The project meets: 15% of energy needs (electricity and fuel) from renewable sources.	(A) The project meets: 30% of energy needs (electricity and fuel) from renewable sources.	(A) The project meets: 50% of energy needs (electricity and fuel) from renewable sources.	(A) The project generates a net positive amount of renewable energy.



RA2.4 Commission and Monitor Energy Systems

14

POINTS

INTENT

Ensure efficient functioning and extend useful life by specifying commissioning and monitoring of energy systems.

METRIC

The inclusion of monitoring equipment and software, the extent of commissioning, and the commissioning agent's independence from the project.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
A + B	A + B	A + B + C	A + B + C	Not Available
(3) Basic Initial Commissioning	(6) Extensive Initial Commissioning	(12) Long-Term Commissioning	(14) Advanced Initial And Long-Term Commissioning	
<p>(A) The project includes energy monitoring capabilities.</p> <p>Equipment and/or software are incorporated to allow detailed monitoring of performance during operation.</p> <p>The equipment is capable of independently monitoring all primary project functions, accounting for at least 50% of energy use/consumption.</p>	<p>(A) The project includes energy monitoring capability.</p> <p>Equipment and/or software are incorporated to allow detailed monitoring of performance during operation.</p> <p>The equipment is capable of independently monitoring all primary project functions, accounting for at least 75% of energy use/consumption.</p>	<p>(A) The project includes integrated energy management systems.</p> <p>Energy management software is incorporated to allow for detailed and centralized monitoring and reporting of performance.</p> <p>The equipment is capable of independently monitoring all primary project functions, accounting for at least 90% of energy use/consumption.</p>		
<p>(B) The project conducts an initial commissioning of energy systems accounting for at least 50% of the total energy consumption/generation.</p> <p>Commissioning includes a detailed log of issues.</p>	<p>(B) The project conducts an initial commissioning of energy systems accounting for at least 75% of the total energy consumption/generation.</p> <p>Commissioning includes a detailed log of issues.</p>	<p>(B) The project conducts an initial commissioning of energy systems accounting for at least 90% of the total energy consumption/generation.</p> <p>Commissioning includes a detailed log of issues.</p> <p>The owner engages a third party or in-house commissioning agent not involved in the planning/design of the project.</p>	<p>(B) The project conducts an initial commissioning of energy systems accounting for at least 90% of the total energy consumption/generation.</p> <p>Commissioning includes a detailed log of issues.</p> <p>The owner engages an independent third-party commissioning agent.</p>	
		<p>(C) A comprehensive plan is developed for ongoing periodic re-commissioning/review of energy systems throughout the expected life of the project.</p>		

RA2.4 Commission and Monitor Energy Systems

Enhanced
A+B
6 pts

- A. The project includes **energy monitoring capability**. Equipment and/or software are incorporated to allow detailed monitoring of performance during operation. The equipment is capable of independently monitoring all primary project functions, accounting for at least 75% of energy use/consumption.
- B. The project conducts an **initial commissioning of energy systems** accounting for at least 75% of the total energy consumption/generation. Commissioning includes a detailed log of issues.

Superior LOA requires engaging a third-part or in-house commissioning agent not involved in the planning/design of the project and a plan for ongoing periodic re-commissioning/review of energy systems throughout the expected life of the project.



CR1.1 Reduce Net Embodied Carbon

20

POINTS

INTENT

Reduce the impacts of material extraction, refinement/manufacture, and transport over the project life.

DESCRIPTION

This credit addresses the embodied carbon of materials used over the life of the project. This combines concepts of sourcing local materials, using materials more efficiently, and using lower-impact materials in order to reduce the combined environmental impacts of material use. In the calculations, carbon is used as a proxy unit of measure to compare various impacts across the entire supply chain of material consumption. One stage of this supply chain involves raw material extraction/harvesting, refinement, and manufacturing into products. The second involves transportation of the materials from the manufacturer to their final destination on site. By designing projects to use less material, use material efficiently, or specifying materials with lower embodied carbon, as well as reducing transportation distances, project teams can reduce the overall impact of the project.

Material use is specifically addressed over the life of the project, including the necessary replacement or renewal of materials. Often, materials with slightly higher initial embodied carbon will have a lower net embodied carbon over the life of the project if they are more durable and less likely to require repair or replacement.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR
A + B + C	A + B + C	A + B + C
(5) At Least 5% Reduction	(10) At Least 15% Reduction	(15) At Least 30% Reduction
<p>(A) The project team identifies primary materials to be used on the project during construction and operation. The team determines which materials are the primary contributors to net embodied carbon (collectively >80% of total embodied carbon).</p> <p>(B) Embodied carbon is calculated, or acquired by a validated source, for the primary materials identified in (A).</p> <ul style="list-style-type: none"> Embodied carbon of production, including raw material extraction, refinement, and manufacture. Embodied carbon of transporting materials to the project site. The replacement, repair, or refurbishment of materials over the life of the project. 		
<p>(C) The project team demonstrates at least a 5% reduction in total embodied carbon of materials over the life of the project compared to the baseline. Calculations should be in tons CO₂.</p>	<p>(C) The project team demonstrates at least a 15% reduction in total embodied carbon of materials over the life of the project compared to the baseline. Calculations should be in tons CO₂.</p>	<p>(C) The project team demonstrates at least a 30% reduction in total embodied carbon of materials over the life of the project compared to the baseline. Calculations should be in tons CO₂.</p>

(C) The project team demonstrates at least a 50% reduction in total embodied carbon of materials over the life of the project compared to the baseline. Calculations should be in tons CO₂.

CR1.1 Reduce Net Embodied Carbon

Improved – 5%
Enhanced – 15%
Superior – 30%
Conserving – 50%

- A. The project team identifies **primary materials** to be used on the project during construction and operation. The team determines which materials are the primary contributors to net embodied carbon (**collectively >80%**).
- B. Embodied carbon is calculated, or acquired by a validated source, for the primary materials identified in criterion A. Calculations include:
- Embodied carbon of production, including raw material extraction, refinement, and manufacture.
 - Embodied carbon of transporting materials to the project site.
 - The replacement, repair, or refurbishment of materials over the life of the project.

Criteria would need to be added to DB requirements.

Concrete
Asphalt
Aggregate
Gravel
Metals
Brick

Reuse of gravity thickeners will also contribute this credit.

How does equipment fit into this?

Operational materials?

CR1.1 Reduce Net Embodied Carbon

C. The project team demonstrates at least a % **reduction in total embodied carbon of materials over the life of the project** compared to the baseline.

Documentation of strategies/plans to reduce net embodied carbon. These may include but are not limited to:

- Sizing the project to require less material;
- Designing the project to use less material;
- Choosing materials that have lower embodied carbon;
- Reducing material needed for repair and maintenance;
- Reducing material waste during construction;
- Reducing material waste during operation;
- Sourcing local materials to reduce transportation emissions;
- Utilizing lower-carbon transportation modes.

Improved – 5%
Enhanced – 15%
Superior – 30%
Conserving – 50%

Criteria would need to be added to DB requirements.

Concrete
Asphalt
Aggregate
Gravel
Metals
Brick

Reuse of gravity thickeners will also contribute this credit.

How does equipment fit into this?

Operational materials?



CLIMATE AND RESILIENCE: EMISSIONS

CR1.2 Reduce Greenhouse G

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POINTS

INTENT

Reduce greenhouse gas emissions during the operation of the project, reducing project contribution to climate change.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR
A + B	A + B	A + B
(8) At Least 10% Reduction	(13) At Least 25% Reduction	(18) At least 50% Red
(A) The project team demonstrates at least a 10% reduction in total CO ₂ e over the operational life of the project compared to the baseline. Calculations should be in tons CO ₂ e.	(A) The project team demonstrates at least a 25% reduction in total CO ₂ e over the operational life of the project compared to the baseline. Calculations should be in tons CO ₂ e.	(A) The project team demonstrates at least a 50% reduction in total CO ₂ e over the operational life of the project compared to the baseline. Calculations should be in tons CO ₂ e.
(B) The project team maps and calculates the total annual greenhouse gas emissions of the final project direct and indirect greenhouse gas emissions and sequestration associated with project operations.		

DESCRIPTION

This credit addresses greenhouse gas emissions during operations and the project's contribution in reducing the impacts of climate change. The embodied carbon of materials is specifically addressed in CR1.1 Reduce Net Embodied Carbon. Emission of greenhouse gases during construction is addressed in RA2.2 Reduce Construction Energy Consumption.

The increased release of carbon dioxide (CO₂) and other greenhouse gases (GHGs) has caused a significant increase in the concentration of CO₂ in the atmosphere, enhancing the greenhouse effect. The subsequent increase in the average temperature of the earth's surface causes various cascading effects, including melting glaciers, arctic sea ice loss, sea level rise, increased ocean temperatures, increased ocean acidity, changing vegetation patterns, increased range of disease vectors, decreased snowmelt, changing precipitation patterns, increased flooding, increased storm intensity, and increased storm frequency, to name a few. This can have many unintended consequences such as flooding when historic periods of snowfall change to rain, drought from increased evaporation and lack of snowmelt, loss of coral reefs and aquatic biodiversity from ocean acidification, and food scarcity as increased temperatures reduce crop production. Reducing the emission of GHGs now will help mitigate the effects of climate change in the future.

CR1.2 Reduce Greenhouse Gas Emissions

- A. The project team demonstrates at least a 50% reduction in total CO₂e over the operational life of the project compared to the baseline.
- A. The completed project is carbon negative (i.e., sequesters/removes more CO₂e than it produces over the operational life).
- B. The project team maps and calculates the total annual

Baseline: Existing condition (over a period equivalent to the operational life of the project) or Future state: existing process

Increased low LOA to Superior and high LOA to Restorative. Superior LOA if using the Future 2037 figures from TM, without any renewables. If Arlington County reaches its goal of 100 percent renewable energy sourcing by 2025, or is very close when the project is submitted for design review, the calculation could show the project being carbon negative.



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Next Steps

Next Steps

- Action items from today:
 - Natural World credits: Review habitat opportunities as site plan is refined/finalized with Design/Build Team
- Next full meeting in December 2023
 - Agenda topics TBD – Report out from this discussion – Volunteers?
 - Preferred meeting format—in person?

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Thank you!