

Arlington County Water Pollution Control Plant

Arlington Re-Gen

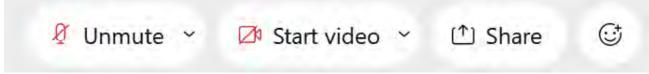
Biosolids Advisory Panel Envision Subcommittee Meeting

October 18, 2023

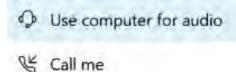


Meeting Logistics WEBEX CONTROLS



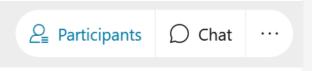


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Agenda

- **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



































Reduce operating costs







High-performing and efficient project

















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%





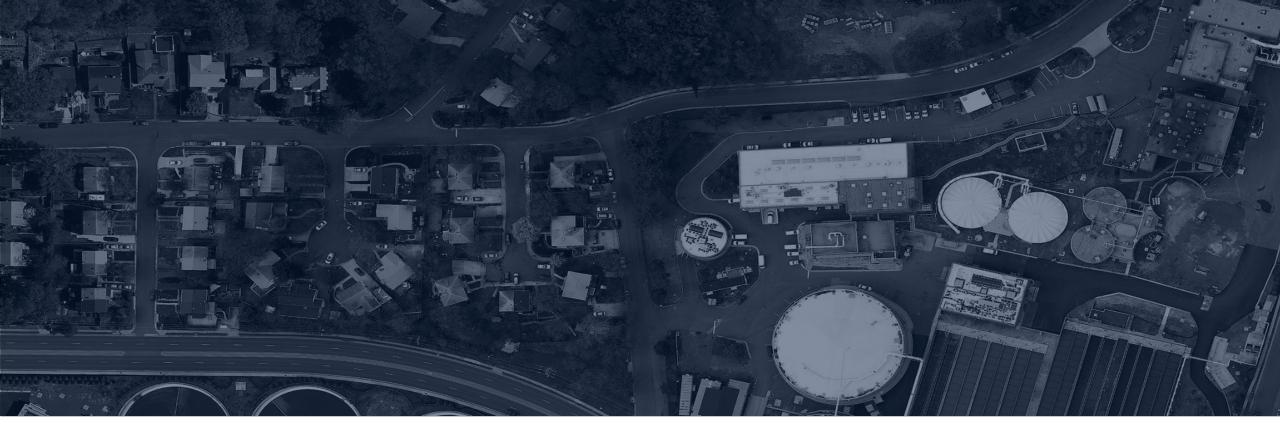
Envision Recognition Levels











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	Restor ative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER						MENT	
		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
	PURPOSE	QL1.3 Improve Construction Safety	0	0	2	5	10	14	-
nu.	PORPOSE	QL1.4 Minimize Noise and Vibration	0	0	1	3	6	10	12
QUALITY OF LIFE		QL1.5 Minimize Light Pollution	0	0	1	3	6	10	12
5		QL1.6 Minimize Construction Impacts	0	0	1	2	4	8	-
2		QL2.1 Improve Community Mobility and Access	0	0	1	3	7	11	14
ALI	WELLBEING	QL2.2 Encourage Sustainable Transportation	0	0	-	5	8	12	16
8		QL2.3 Improve Access and Wayfinding	0	0	1	5	9	14	-
		QL3.1 Advance Equity and Social Justice	0	0	3	6	10	14	18
	COMMUNITY	QL3.2 Preserve Historic and Cultural Resources	-18	0	-	2	7	12	18
	COMMONT	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			2	00	18	82		
			Ex	clude	d (n/a)	100	18		
					High	7	21		5%
					Low	1	06	58.	2%



Leadership Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	ot Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER				L OF AC			
		LD1.1 Provide Effective Leadership and Collaborati	0	0	2	5	12	18	-
	COLLABORATION	LD1.2 Foster Collaboration and Teamwork	0	0	2	5	12	18	-
	COLLABORATION	LD1.3 Provide for Stakeholder Involvement	0	0	3	6	9	14	18
<u>d</u>		LD1.4 Pursue Byproduct Synergies	0	0	3	6	12	14	18
EADERSHIP		D2.1 Establish a Sustainability Management Plan		0	4	7	12	18	-
DER	PLANNING	LD2.2 Plan for Sustainable Communities	0	0	4	6	9	12	16
AC	PLANNING	LD2.3 Plan for Long-Term Monitoring and Maintena		0	2	5	8	12	-
3		LD2.4 Plan for End-of-Life		0	2	5	8	14	-
		D3.1 Stimulate Economic Prosperity and Developr		0	3	6	12	20	-
	ECONOMY	LD3.2 Develop Local Skills and Capabilities		0	2	4	8	12	16
		LD3.3 Conduct a Life-Cycle Economic Evaluation	0	0	5	7	10	12	14
		LD0.0 Innovation (earn up to 6 points)					6		
			Vlaxim				82	18	32
			Ex	clude	d (n/a)		0	-	***
					High Low		50 35		4% 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					CHIEVE		
		RA1.1 Support Sustainable Procurement	0	0	3	6	9	12	-
		RA1.2 Use Recycled Materials	0	0	4	6	9	16	-
2	MATERIALS	RA1.3 Reduce Operational Waste	0	0	4	7	10	14	-
2		RA1.4 Reduce Construction Waste	0	0	4	7	10	16	-
S		RA1.5 Balance Earthwork On Site	0	0	2	4	6	8	-
RESOURCE ALLOCATION	ENERGY	RA2.1 Reduce Operational Energy Consumption	0	0	6	12	18	26	-
AL		RA2.2 Reduce Construction Energy Consumption	0	0	1	4	8	12	-
SCE.	ENERGY	RA2.3 Use Renewable Energy	0	0	5	10	15	20	24
DO .		RA2.4 Commission and Monitor Energy Systems	0	0	3	6	12	14	-
ESC		RA3.1 Preserve Water Resources	0	0	3	5	7	9	12
~	WATER	RA3.2 Reduce Operational Water Consumption	0	0	4	9	13	17	22
	WAILK	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		
			Vlaxim	ım RA	Points	1	96	19	96
			Ex	cluded	d (n/a)		0	1000	201
11					High		33 31		3% 3%
					Low		01	41.	370



Natural World Credit Summary

		Must provide a clear justification if a credit is identified as not applicable to a project for exclusion.	Applicable	None	Improved	Enhanced	Superior	Conserving	Restorative
CATEGORY	SUB-CATEGORY	CREDIT NAME/NUMBER			LEVE	OF A	CHIEVE		
		NW1.1 Preserve Sites of High Ecological Value	-22	0	2	6	12	16	22
	SITING	NW1.2 Provide Wetland and Surface Water Buffers	-20	0	2	5	10	16	20
	Simila	NW1.3 Preserve Prime Farmland	-16	0	-	2	8	12	16
		NW1.4 Preserve Undeveloped Land	0	0	3	8	12	18	24
RLC		NW2.1 Reclaim Brownfields	-22	0	11	13	16	19	22
ō N		NW2.2 Manage Stormwater	0	0	2	4	9	17	24
NATURAL WORLD	CONSERVATION	NW2.3 Reduce Pesticide and Fertilizer Impacts	0	0	1	2	5	9	12
2		NW2.4 Protect Surface and Groundwater Quality	0	0	2	5	9	14	20
NA		NW3.1 Enhance Functional Habitats	-18	0	2	5	9	15	18
		NW3.2 Enhance Wetland and Surface Water Functi	-20	0	3	7	12	18	20
	ECOLOGY	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		
		M			Points		32	1	00
			Ex	clude	d (n/a)		32	25	00/
					High Low		35 35		.0% .0%
7					LOW	- 3		JJ.	070



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			LEVE	OF A	CHIEVE	MENT	
w		CR1.1 Reduce Net Embodied Carbon	0	0	5	10	15	20	-
Ž	EMISSIONS	CR1.2 Reduce Greenhouse Gas Emissions	0	0	8	13	18	22	26
& RESILIENCE		CR1.3 Reduce Air Pollutant Emissions	0	0	2	4	9	14	18
ESI		CR2.1 Avoid Unsuitable Development	-16	0	3	6	8	12	16
8		CR2.2 Assess Climate Change Vulnerability	0	0	8	14	18	20	-
벁	RESILIENCE	CR2.3 Evaluate Risk and Resilience	0	0	11	18	24	26	-
CLIMATE	RESILIENCE	CR2.4 Establish Resilience Goals and Strategies	0	0	-	8	14	20	-
5		CR2.5 Maximize Resilience	0	0	11	15	20	26	-
_		CR2.6 Improve Infrastructure Integration	0	0	1	5	9	13	18
		CRO.0 Innovation (earn up to 5 points)					2		
		Maximum CR Poin					90	1	74
			Ex	clude	d (n/a)		16	44	004
					High Low		27 96		.0% .2%



Envision Guidance Manual Structure – Credit

Credit # and title

Intent:
Purpose of the credit

Max Points

Levels of Achievement

Description
Details on
purpose and
objectives;
why credit is
important

Performance Improvement Getting to the next LOA

QL2.1 Improve Community Mobility and Access

Į.

INTENT

Plan the project as part of a connected network that supports all transportation modes for the efficient movement of people, goods, and services.

METRIC

The extent to which the project broadens mode choices, reduces commute times, reduces vehicle distance traveled, and improves levels of service.

LEVELS OF ACHIEVEMENT

POINTS

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
A + B	A+B+C	A + B + C + D	A + B + C + D + E	A+B+C+D+E+F
(1) Satisfactory Coordination	(3) Controlled Access	(7) Increased Access and Flow	(11) Connected Networks	(14) Restoring Community Connections

(A) The project team demonstrates consistency with local and regional transportation plans.

(B) The project team obtains input from the community and key stakeholders (e.g., public officials and operators of adjacent facilities, amenities, or transportation hubs) regarding improved access.

(C) The project includes strategies to increase capacity, manage congestion, reduce vehicle distance traveled, or lower accident rates

(D) The project team works with the community to expand mobility and access options and/or incorporate complete streets policies.

(E) The project addresses long-term mobility and access needs of the community

(F) The project creates new or restores previous connections between communities.

DESCRIPTION

This credit addresses community mobility as a connected network for all modes, including private automobile usage, and focuses on the broader community benefits achieved from the efficient movement of people, goods, and services. It assesses quality-of life benefits that mobility provides through greater access to jobs, education, and critical services. These include reducing commune times, reducing vehicle distance traveled, or improving levels of service

Greater mobility provides freedom of chair to access to education, jobs, afformed me, and even healthy food and activities and impediments to mobility are also discontent within communities of often be found calculating the local configuration of the configurat

Is should consider how even non-transportation as can become multi-benefit projects by contributing or more efficient mobility in the community. This may include how site access is configured, the mode with which it is accessed, or the frequency of trips to and from the site. For example, a park that incorporates a pedestrian overpass can improve the mobility of both cars and pedestrians.

PERFORMANCE IMPROVEMENT

The assessment of mobility in this credit is scalable, and expectations regarding the geographic scope of the assessment are relative to the scale of the project. For example, large rail projects might assess mobility across an entire region, while a small park projecting assess mobility to and from local neighborhoods.

Improved: The project is consistent with local transportation plans that were developed and adopted through an inclusive public involvement process. Wherever possible, the project should consider its relationship to nearby housing, employment, shops and community facilities. The project team demonstrates a reasonable, inclusive, and coordinated approach to addressing mobility impacts.

Enhanced: Overall mobility is enhanced with a connected network that helps reduce congestion, improves traffic flow, and/or contributes to community livability. Project teams implement strategies to accommodate or support automobile, transit, and commercial vehicles while promoting complete streets policies leading to more active, healthier lifestyles. With the increasing role of technology, project teams should consider ways to utilize open data to enhance project performance.

Conserving: The project team is proactive in identifying the limitations and future mobility needs of the coincorporating strategies to adde

Rest connections. Beyond improving existing performance, the project has created new mobility opportunities with potentially cascading benefits (e.g., better access to schools, commercial districts, healthcare, etc.).

Applicability: Consideration is given to whether the project has any potential to impact mobility. Non-transportation projects that do not include any mobility impacts (positive or negative), and can demonstrate no potential for positively impacting mobility, may apply to have this credit deemed not applicable with supporting documentation. This credit is inherently applicable to all transportation infrastructure projects.

EVALUATION CRITERIA AND DOCUMENTATION GUIDANCE

- A. Is the project consistent with local transportation plans?
- Documentation demonstrating consistency with local and regional transportation plans. When applicable, documentation may include an amendment to the transportation plan(s).
- B. Has the project team obtained input from the community and key stakeholders regarding issues of mobility and access?
- Documentation (e.g., reports, memoranda, and/or minutes) of meetings with the community and key stakeholders (e.g., community officials or managers and operators covering access to adjacent facilities, amenities, and transportation hubs).
- 2. Records of decisions made and actions taken.
- C. Does the project include strategies to increase capacity, manage congestion, reduce vehicle distance traveled, or lower accident rates?
- Reports documenting access and mobility principles, concepts, requirements, and expected outcomes of the project.
- Documentation of how the project increases transportation capacity, efficiency is g, reduced congestion and/or vehicle distance traveled), or lity (lower accident rates).

- or incorporate complete streets policies?
- Assessment of the availability, feasibility, and use of transportation options (e.g., rail, water, active transportation, or mass transportation access).
- Documentation of how the project expands mobility and access options, including a rationale for making or not making changes to transportation modes.
- When applicable, reports demonstrating the use of complete streets policies and guidelines.
- E. Has the project team considered the long-term mobility and access needs of the community?
- Documentation of the long-term mobility and access needs of the community (e.g., existing studies, reports, memoranda, and/or minutes).
- Design components showing the extent to which longterm mobility and access needs and issues were incorporated into the constructed work. For example, expanding considerations to anticipated traffic flows and volumes, changes in technology, preferred modes of access, and effects on mobility and connectivity.
- Documentation showing how the project addressed the community as a connected network, including long-term transportation infrastructure efficiency, walkability, and incentivized transportation efficiency.
- F. Does the project create new or restore previous connections between communities?
 - Documentation of meetings with community officials discussing the need for new connections/reconnections between communities (e.g., reports, memoranda, and/or minutes).
- Documentation of how the project provides new or improved connections between communities in order to increase overall mobility. For example, connecting housing, jobs, shops, and/or community facilities by utilizing or improving existing transportation infrastructure.

RELATED ENVISION CREDITS

QL1.1 Improve Community Quality of Life QL3.1 Advance Equity and Social Justice

Related Credits

Metric: How

the credit

measured

will be

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

- 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.

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.

In DB requirements

Criterion D would need to be added to DB requirements.

Would a Conserving LOA be possible due to screening wall?

QL3.3 Enhance Views and Local Character

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

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

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

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

- 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.
- Criteria would need to be added to DB requirements.

B. At least X% of all project materials, supplies, and equipment meet the sustainable procurement policy/program requirements.

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

RA1.3 Reduce Operational Waste

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.

DB requirements: Provide input as requested

B. The project team identifies waste streams or byproducts that will occur as a result of the operation of the project.

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

- 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

Improved – 6 pts A+B >10% (<30%)

RA2.1 Reduce Operational Energy Consumption

26

POINTS

INTENT

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

LEVELS OF ACHIEVEMENT

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

DESCRIPTION

This credit addresses the important need to reduce overall energy consumption. Energy generation is the primary source of greenhouse gas emission; 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.

- **(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%.



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, solarpowered 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;
 - 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

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



RA2.4 Commission and Monitor Energy Systems

14

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	
(A) The project includes energy monitoring capabilities. 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 50% of energy use/consumption.	(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.	(A) The project includes integrated Energy management software is in and centralized monitoring and rep The equipment is capable of indep monitoring all primary project fund for at least 90% of energy use/cons	corporated to allow for detailed porting of performance. endently ctions, accounting	
(B) The project conducts an initial commissioning of energy systems accounting for at least 50% of the total energy consumption/generation.	(B) The project conducts an initial commissioning of energy systems accounting for at least 75% of the total energy consumption/generation.	(B) The project conducts an initial commissioning of energy systems accounting for at least 90% of the total energy consumption/generation.	(B) The project conducts an initial commissioning of energy systems accounting for at least 90% of the total energy consumption/generation.	
Commissioning includes a detailed log of issues.	Commissioning includes a detailed log of issues.	Commissioning includes a detailed log of issues.	Commissioning includes a detailed log of issues.	
		The owner engages a third party or in-house commissioning agent not involved in the planning/design of the project.	The owner engages an independent third-party commissioning agent.	
		(C) A comprehensive plan is develor periodic re-commissioning/review throughout the expected life of the	of energy systems	

RA2.4 Commission and Monitor Energy Systems

- 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

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POINTS

INTENT

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

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

- (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
 - 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.
- (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 CO₃.
- **(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.
- **(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.

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.

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 over the operational life the project compared to the baseline. Calculation should be in tons CO ₂ e.

(B) The project team maps and calculates the total annual greenhouse gas emissions of the final prodirect 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 CO, 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.



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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