

# NORTHWEST LOUISIANA COUNCIL OF GOVERNMENTS SHREVEPORT/BOSSIER CITY URBANIZED AREA



## DRAFT CARBON REDUCTION PROGRAM (CRP) PROJECT SELECTION PROCESS (PSP)

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## Anacronyms

AADT	Annual Average Daily Traffic (Seasonal and day of the week adjusted Average 24-hour traffic volume)
APU	Auxiliary Power Unit
AQI	Air Quality Index
BIL	Current Transportation Authorization (Bipartisan Infrastructure Law)
CO2	Carbon Dioxide – vehicle emission and air pollutant
CRP	Carbon Reduction Program (Federal Funding Program)
DOT	US Department of Transportation
EPA	Environmental Protection Agency
FFY	Federal Fiscal Year (October 1 <sup>st</sup> – September 30 <sup>th</sup> )
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
LADOTD or DOTD	Louisiana Department of Transportation and Development
MAP-21	Moving Ahead for Progress in the 21 <sup>st</sup> Century (FY13-14)
MTP	Metropolitan Transportation Plan
MPO	Metropolitan Planning Organization
NLCOG	Northwest Louisiana Council of Governments (MPO)
PBP	Performance Based Planning
PSP	Project Selection Process
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
STBG	Surface Transportation Program Funds (Federal Funding Program)
STBG >200K	Surface Transportation Program attributable funds for areas of over 200k population
TA	Transportation Alternatives (Federal Funding Program)
TCC	NLCOG's Technical Coordinating Committee
TEA-21	Transportation Equity Act for the 21 <sup>st</sup> Century
TIP	Transportation Improvement Program
TMA	Transportation Management Area
TSM&O	Transportation Systems Management and Operations
UPWP	Unified Planning Work Program

## CRP-PSP Introduction

Social and economic damage caused by exposure to air pollution, such as Carbon Dioxide (CO<sub>2</sub>), represent a negative externality because their impacts are borne by society as a whole, rather than by the travelers and operators whose activities generate those emissions. Transportation projects that reduce overall fuel consumption, either due to improved fuel economy or reduction in vehicle miles traveled, will typically also lower emissions, and may thus produce climate and other environmental benefits. Conversely, projects that lead to increased vehicle miles traveled, such as through induced demand, may lead to an increase in emissions.

The Shreveport/Bossier City Urbanized Area's regional transportation planning needs are served by the Northwest Louisiana Council of Governments Metropolitan Planning Organization (NLCOG MPO). NLCOG's *Project Selection Processes (PSPs)* fulfill several needs under the overarching metropolitan transportation planning process. To spend federal dollars on local transportation projects and programs, a metropolitan area must have a Metropolitan Transportation Plan (MTP – or the Long-Range Transportation Plan) and Transportation Improvement Program (TIP). Both of these documents must be 'financially constrained' and must adhere to the principles laid out first in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, and later in the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21), FAST ACT ([Fixing America's Surface Transportation \(FAST\) Act](#)), BIL/IIJA ([Bipartisan Infrastructure Law / IIJA](#)) and the final rules governing metropolitan planning.

According to the final rules regarding metropolitan planning, published in the Federal Register, MTPs must have, at all times, at least a 20-year planning horizon. A MTP must also be updated at least every five years in areas that are designated as attainment for air quality. Since the NLCOG area is designated attainment for ozone, our MTP will always have a planning horizon of at least 20 years or more and will undergo a **full** update every five years.

*The BIL establishes the Carbon Reduction Program (CRP), which provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO<sub>2</sub>) emissions from on-road highway sources.*

*Statutory Citation: § 11403; 23 U.S.C. 175*

The Transportation Improvement Program for the NLCOG MPO area is a four-year document. Those four years correspond to the first analysis period (Stage I) of the MTP; the TIP is a subset of the MTP. The TIP is updated every four years by the MPO (NLCOG).

## PERFORMANCE BASED PLANNING

### MPO Performance Based Planning Requirements

With the passage of the BIL/IIJA in 2021, an emphasis of performance-based planning continues which mandates statewide and metropolitan planning processes to incorporate a more comprehensive performance-based approach to their decision-making. Performance measures and target setting are defined and adopted within the MPO's Metro. Transportation Plan (MTP). MTP improvement projects are being prioritized through the Project Selection Process (PSP), the MPO's Staff initially screens projects for eligibility under the CRP>200K requirements. Further, staff evaluates/scores each project utilizing an equitable and rationally developed performance-based scoring system. The highest evaluated projects are programmed into the four-year TIP.

### Project Selection Process within the MPO Transportation Planning Process

Performance-based planning principles place an emphasis upon statewide and metropolitan planning processes to incorporate a more comprehensive performance-based approach to their decision-making processes. The legislation requires the U.S. Department of Transportation, in consultation with states, MPOs and other stakeholders, to establish performance measures in these areas:

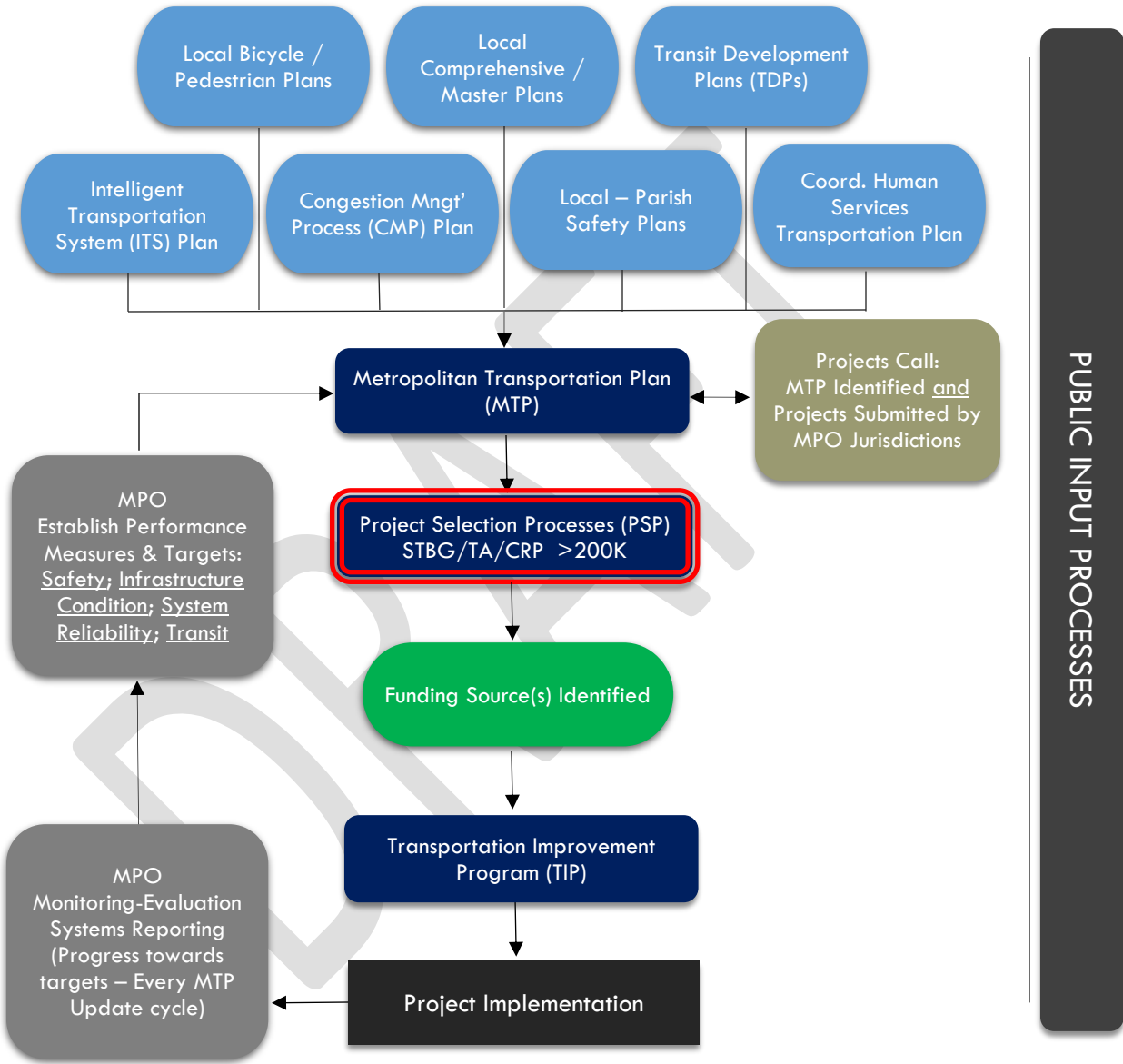
- Safety (PM-1)
- Infrastructure condition (PM-2)
- Congestion reduction and system reliability (PM-3)
- Freight movement and economic vitality (PM-3)
- Environmental sustainability (US DOT Initiative)
- Transit Asset Management ([FTA's Transit Asset Mngt' Final Rule \[81 FR 48890\]](#))
- Reduced project delivery delays and project readiness (US DOT Initiative; Environmental Streamlining)

To monitor the performance of the transportation system, and the effectiveness of programs and projects as they relate to the National Goals, a series of performance measures were established in the areas of safety (PM1), infrastructure condition (PM2), and system performance (PM3). These measures are outlined in 49 USC 625 and 23 CFR 490. NLCOG (MPO) has adopted (01.11.2019) a document, “NLCOG - MPO FRAMEWORK FOR PERFORMANCE MEASURES AND TARGET SETTING”, that details the MPO’s commitment to programming improvement projects that contribute toward the accomplishment of the relevant State DOT/MPO Performance Targets.

Figure 1.0, following page, illustrates the importance of carefully developed Project Selection Processes within the overall framework of NLCOG’s transportation planning process. Further, these project/program selection processes support efforts in meeting performance-based planning requirements and reaching MPO adopted transportation performance targets.

*For MPOs’ to program new projects in the most cost-effective manner AND meet the BIL/IIJA requirements, the MPO Project Selection Process (PSP) evaluation/scoring criteria needs to ALIGN with the MPO’s established Performance-Based Goals, Measures and Targets.*

**FIGURE 1.0 - MPO's (PSP) WITHIN THE OVERALL FRAMEWORK OF NLCOG'S TRANSPORTATION PLANNING PROCESS**



# Carbon Reduction Program (CRP) Funding, Eligible Project Types, and Initial Project Screening

One funding category contained in the MTP and TIP is the Federal Carbon Reduction Program (CRP) for metropolitan areas greater than 200,000 in population (CRP).

This document provides guidance concerning the rational and equitable selection of local transportation improvement projects. Further, it documents a process that aligns the CRP-PSP with the MPO's established Performance-Based Goals, Measures and Targets.

## LIST OF ELIGIBLE CRP PROJECT/PROGRAM TYPES <sup>(1)</sup>

For local CRP project sponsor reference, through the BIL/IIJA, CRP projects/programs that are eligible for funding are provided below, organized by type.

- Establishing or operating a traffic monitoring, management, and control facility or program
- Public transportation projects
- Alternative forms of transportation projects of on-road and off-road trail amenities for people, bicyclists, and other nonmotorized users
- Advanced transportation and congestion management technologies
  - Advanced traveler information systems
  - Advanced transportation management technology
  - Advanced transportation technologies to improve emergency evacuation and response
  - Infrastructure maintenance, monitoring, and condition assessment
  - Advanced public transportation systems
  - Performance data collection, analysis, and dissemination systems

*As of Federal Fiscal Year (FFY) 2024, NLCOG is sub-allocated \$951,077.00 annually in Federal Carbon Reduction Program Funding.*



- Advanced safety systems
- Integration of intelligent transportation systems with the Smart Grid and other energy distribution and charging systems
- Integrated corridor management systems
- Advanced parking reservation or variable pricing systems
- Electronic pricing, toll collection, and payment systems
- Technology that enhances high occupancy vehicle toll lanes
- Integration of transportation service payment systems
- Advanced mobility, access, and on-demand transportation service technologies
- Retrofit of dedicated short-range communications technology
- Infrastructure-based intelligent transportation systems capital improvements and the installation of vehicle-to-infrastructure communications equipment
- Replace street lighting and traffic control devices with energy-efficient alternatives
- Projects supporting congestion pricing, shifting vehicle movement to nonpeak hours or other transportation modes
- Projects reducing the environmental and community impacts of freight movement
- Deploying alternative fuel vehicles
  - Acquisition, installation, or operation of public alternative vehicle fueling infrastructure
  - Purchasing or leasing zero-emission construction equipment and vehicles
- Diesel engine retrofit
- Project to improve traffic flow that is eligible under the CMAQ program, and that does not involve the construction of new capacity
- Project that reduces transportation emissions at port facilities
- STBG-eligible project that the State can prove a reduction in transportation emissions, as estimated on a per capita and per unit of economic output basis

## INITIAL SUBMITTED PROJECT/PROGRAM EVALUATION

The following initial screening criteria will determine which projects are eligible to be evaluated for funding under the CRP program and whether they will be included in the ‘financially constrained’ component of TIP and MTP. The initial review of submitted CRP projects is undertaken by NLCOG Staff.

1. Submitted projects will support and be consistent with the area’s long-range transportation goals (as identified through the MTP 2045 Update process), including the MPO’s adopted Performance Measures and Targets.
2. The MPO will disseminate LADOTD’s Stage 0 documents (current Scope/Budget and Environmental checklists) to all members of the MPO’s TCC at their request and additionally during the “Project Call” period. LADOTD’s Stage 0 Process is in essence a feasibility study of the locally submitted project documenting the purpose and need, as well as the merits of the project or program. It is the first step taken in LADOTD’s project delivery process. The information obtained through this initial form will be utilized to determine project eligibility (under the rulemaking for the CRP funds). At any time during the local project submission process, NLCOG Staff are available to answer any questions or assist in the development of completing the Stage 0 forms.
3. When or if the submitted project is ready to be programmed within the MPO’s TIP, the necessary information obtained through LADOTD’s Stage 0 Process checklists will serve as the project’s source documentation for the initial LOI and NLCOG’s TIP request to LADOTD.

*(1) BIL/IIJA CFR listing of Eligible CRP funded projects/programs:*

[https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp\\_guidance.pdf](https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

*LADOTD’s Project Delivery Process Document:*

<http://www.dotd.la.gov/Inside-LaDOTD/Divisions/Engineering/Project-Management/Project%20Delivery%20Manual/LA%20DOTD%20Project%20Delivery%20Manual%202013%20-%20FINAL.pdf>

# NLCOG'S Project Selection Process (PSP)

## Updated to Align with BIL/IIJA Performance Based Planning Principles

NLCOG's MPO Project Selection Process consists of six (6) steps:

1. Project Call / Current Schedule
2. Project Submission
3. Initial Project Review and Evaluation (MPO Staff)
4. CRP Project Scoring / Breakout (MPO Staff)
5. MPO Technical Coordinating Committee (TCC) Discussion, Consideration and Recommendations to the MPO Transportation Policy Committee
6. MPO Transportation Policy Committee Review and Approval

The following pages contain a detailed discussion of the six (6) steps and how they are carried out.

### STEP 1. PROJECT CALL / CURRENT SCHEDULE

The MPO Director, in consultation with staff, will send out a call for projects notice to all member governments in the NLCOG MPO. The project call will run for approximately 45 days. All projects must be submitted prior to the ending date specified in the project call letter.

Currently, the only **required** "Project Call" NLCOG puts out for local entity project submissions is scheduled during the development of the Draft Metropolitan Transportation Plan (MTP) (i.e., once every four (4) years). NLCOG's TCC members are satisfied with this schedule, but if they should request an interim "Project Call" window it can easily be undertaken within the confines of all the Project Selection Processes (PSPs – STBG>200K, CRP>200K, and TA >200K).

### STEP 2. PROJECT SUBMISSION

To reiterate, at the outset of the "Project Call" NLCOG will disseminate LADOTD's Stage 0 documents (current Scope/Budget and Environmental checklists) to all members of the MPO's TCC. It is advisable that a currently licensed Professional Engineer (PE) assist in the development of cost estimates for all phases of the submitted project or program. At any time during the local project submission process, NLCOG Staff are available to answer any questions or assist in the completion of the Stage 0 forms.

### **STEP 3. INITIAL PROJECT REVIEW, EVALUATION AND SCORING PROTOCOL**

Submitted project scoring is significantly skewed when multiple TCC members representing an individual local entity as compared to a single local government representative throughout the evaluation process. In an effort to minimize this scoring deficiency, MPO Staff has revised the submitted project scoring protocol.

All eligible projects will be reviewed and evaluated by NLCOG staff adhering to the project evaluation/scoring criteria, by submitted project category, detailed later in this document. Following staff evaluations, eligible project submittals are presented to the entire Transportation Coordinating Committee (TCC) for concurrence and subsequent recommendation to the MPO's Transportation Policy Committee.

### **STEP 4. CRP PSP – PROJECT EVALUATION/SCORING TRACKS AND SCORING BREAKOUT**

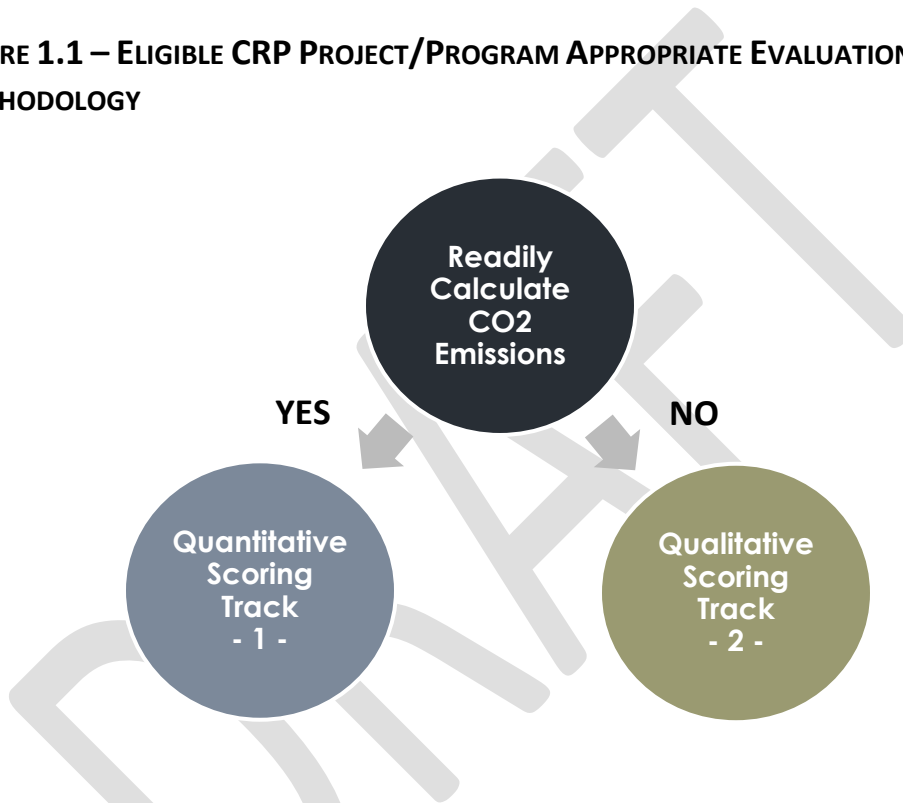
NLCOG staff evaluates and scores the submitted CRP projects that meet the initial eligibility screening requirements. With some CRP projects and/or program types, direct calculation of CO2 emissions reduction is difficult to achieve. The most direct, quantifiable approach to evaluating CRP improvement projects and/or policies-programs is to calculate the anticipated CO2 emissions reduction (i.e., direct Benefit) and rank the proposed projects accordingly (highest reduction to lowest). However, there are issues that inhibit NLCOG from easily quantifying the reduction of on-road CO2 emissions through a rationally developed CRP project level evaluation process.

Therefore, NLCOG Staff will determine the appropriate evaluation-scoring methodology to undertake given the scope of the submitted CRP project or program. Given the submitted project's scope, Staff will determine whether the project lends itself to a more "Quantitative" or "Qualitative" evaluation approach.

*The ability to estimate CO2 reductions varies greatly between eligible CRP project or program types.*

Figure 1.1, following page, illustrates a simple decision-tree based upon the data availability and ease of calculating CO2 emissions reduction costs. If the project/program’s CO2 emissions reductions are calculated in a straightforward manner the project follows the “Quantitative” scoring track #1 with its customized scoring rubric. Submitted CRP projects primarily will follow scoring Track #1. Projects that are difficult to calculate CO2 emissions are placed in the “Qualitative” scoring track #2. Local expertise and NLCOG Staff knowledge are utilized to make the determinations within the context of a unique scoring rubric.

**FIGURE 1.1 – ELIGIBLE CRP PROJECT/PROGRAM APPROPRIATE EVALUATION-SCORING METHODOLOGY**



The rationale behind developing two project evaluation/scoring approaches is that some proposed improvements lend themselves to easily calculate CO2 reductions, for instance deploying alternative fuel vehicles or a diesel engine retrofit program. Other proposed projects/programs cannot be easily quantified, such as establishing or operating a traffic monitoring, management, and control facility or program. From the eligible CRP project category list, NLCOG Staff determined the appropriate scoring track a submitted CRP project/program will undertake during its evaluation and subsequent scoring.

The proceeding page, Table 1.0, presents the recommended scoring track methodology projects/programs will follow given their likelihood to directly calculate CO2 emissions reduction costs.

**Table 1.0 – Recommended Scoring Methodology for Eligible CRP Project/Program Categories (as Identified in the BIL/IIJA)**

CRP – ELIGIBLE PROJECT CATEGORIES	NLCOG’s ABILITY TO DETERMINE CO2 EMISSION REDUCTION COST		
	LIKELY	DIFFICULT or UNKNOWN	RECOMMENDED SCORING TRACK
Establishing or operating a traffic monitoring, management, and control facility or program		✓	Track - 2
Public transportation projects	✓	✓	Project/Program Dependent
Alternative forms of transportation projects of on-road and off-road trail amenities		✓	Track - 2
Advanced transportation and congestion management technologies	✓		Track - 1
Infrastructure-based intelligent transportation systems capital improvements	✓		Track - 1
Replace street lighting and traffic control devices with energy-efficient alternatives	✓		Track - 1
Projects supporting congestion pricing, shifting vehicle movement to nonpeak hours or other transportation modes	✓		Track - 1
Projects reducing the environmental and community impacts of freight movement	✓	✓	Project/Program Dependent
Deploying alternative fuel vehicles	✓		Track - 1
Diesel engine retrofit	✓		Track - 1
Project to improve traffic flow that is eligible under the CMAQ program	✓	✓	Project Dependent
Project that reduces transportation emissions at port facilities	✓		Track - 1
STBG-eligible project that the State can prove a reduction in transportation emissions	N/A	N/A	LADOTD Evaluated

**CRP PROJECT SCORING BREAKOUTS (BY PERCENTAGE)**

CRP project scoring is crucial to prioritizing project submittals in order to effectively program available Federal CRP funding that is sub-allocated to NLCOG annually. Not

only are the eligible project/program's merits scored (i.e., through either Track #1 or #2), but the amount of cost sharing the local entity (i.e., sponsor) secures for the project is taken into consideration. From Table 1.0, most projects/programs are more than likely to directly calculate their CO2 emissions reductions and will follow scoring Track #1.

### **CRP Scoring Breakouts**

Project Track Scoring category:

Detailed discussion of the respective scoring tracks is provided in the proceeding section of the CRP Project Selection Process. The scoring breakout, depending upon the scoring Track, consists of two components.

*For Track #1 CRP Projects:*

- (1) CALCULATE CO2 EMISSIONS REDUCTION COSTS (50% of total project score)
- (2) GEOGRAPHIC IMPACT OF PROJECTS'S SCOPE (25% of total project score)

*For Track #2 CRP Projects:*

- GEOGRAPHIC IMPACT OF PROJECTS'S SCOPE (75% of total project score)

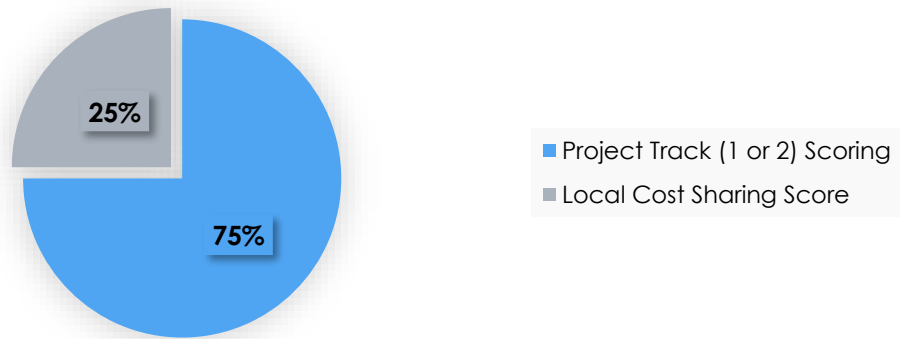
Through either scoring Track #1 or Track #2, the overall scoring for this category will account for **75% of the total CRP project score**.

*Local Entity (Sponsor) CRP Project Funding Support:*

This scoring category documents the level of funding commitment of the locally submitted CRP project or program. This is critical in determining a submitted project's prioritization within the overall MTP's project programming scheme (i.e., TIP projects, Short-Range and Long-Range Programs).

For instance, an eligible CRP project that has a 30% local match support funding commitment is scored higher than a project with the required base minimum 20% local support match support. This section of scoring accounts for **25% of the total CRP evaluation score**.

**Figure 1.2 - Total Project Submittal Scoring Breakout (%)**



Following the prescribed methodology, NLCOG (MPO) Staff will develop a list of prioritized CRP projects and provide this program to the overall TCC for their consideration.

#### **STEP 5. TECHNICAL COORDINATING COMMITTEE (TCC) PRIORITIZATION AND RECOMMENDATION**

After reviewing NLCOG Staff's recommendations and prioritized CRP project list, the TCC will choose to forward a prioritized list of CRP projects/programs to the MPO's Transportation Policy Committee (TPC) for review, consideration, and concurrence.

#### **STEP 6. TRANSPORTATION POLICY COMMITTEE REVIEW AND APPROVAL**

The NLCOG Urbanized Area Transportation Policy Committee (TPC) will review the TCC recommendations. If the TPC chooses to reject the recommendation of the TCC, the project listing is sent back to the TCC work group for further review and evaluation. If the TCC's recommendations are adopted, the prioritized list will be included in the MTP and TIP where funding allows.

TPC selected projects are placed in the 'financially constrained component' of the MTP and TIP based on projected available funding levels, the project's evaluation, the project's implementation timeline (readiness), and input from interagency consultation and coordination. The projects that cannot be included in the MPO Plans will be placed in the 'unconstrained/unmet needs component' and will be considered for review when the next update process begins.



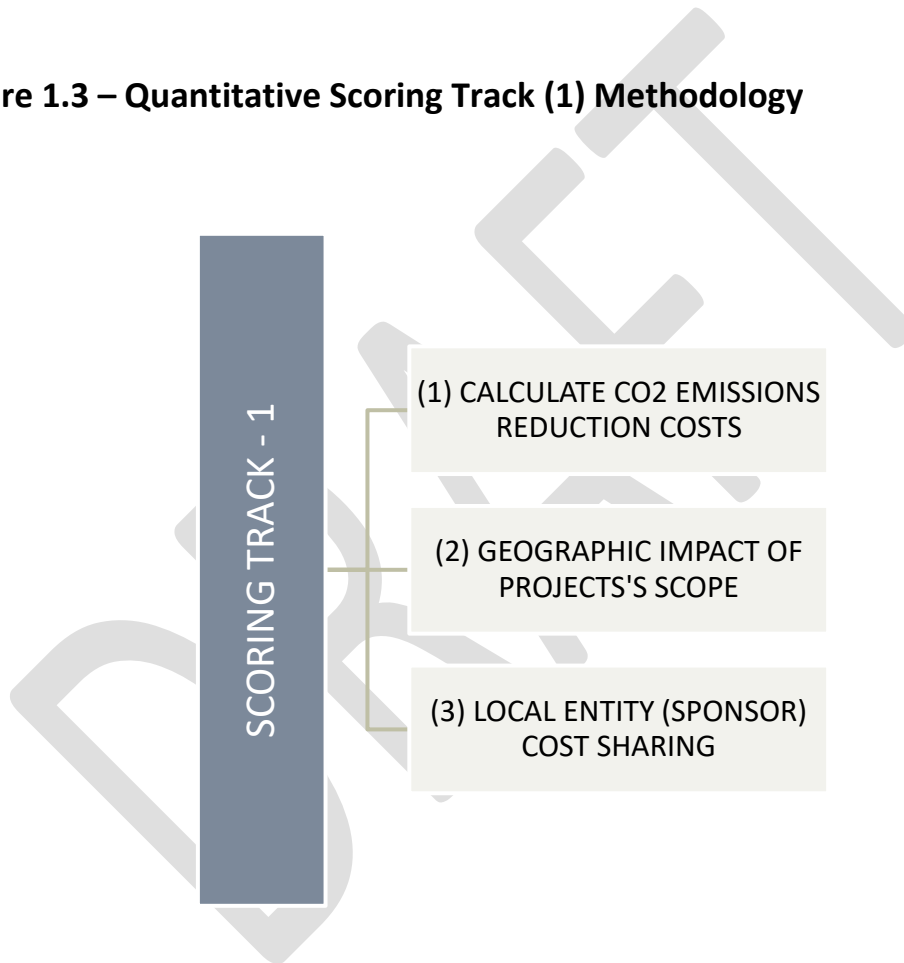
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## Track 1 – Quantitative Methodology

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Eligible CRP projects are rated by employing unique evaluation criteria, based upon a submitted project's scope of work. Both scoring track methodologies employ objective project scoring which entails the utilization of recognized measures that quantify the impact the project will have upon their respective scoring category.

**Figure 1.3 – Quantitative Scoring Track (1) Methodology**



1. Calculation of CO2 emissions reduction (benefit) and overall proposed project costs.
2. Review the submitted project's scope and determine its geographic area of impact and level of effectiveness based upon data from other implemented projects of the same or similar type.

3. The amount of funding over and above the required 20% support the Local Entity (Sponsor) will invest in the project is considered in the overall scoring of the submitted CRP project/program.

These methods provide a clear, consistent, and easily replicated project scoring scheme for any type of CRP project/program submittal.

## EVALUATION METHODOLOGY – TRACK #1

QUANTIFY CO<sub>2</sub> EMISSIONS REDUCTION (BENEFIT) AND CONSIDERATION OF PROJECT/PROGRAM'S COST (50% of total score)

### CO<sub>2</sub> EMISSION REDUCTION BENEFIT

Reductions in emissions attributable to transportation infrastructure projects may often stem from operational improvements or investments in technologies (such as electrification) that reduce fuel usage, as well as reductions tied to reduced VMT, either through reduced travel distances or shifting passenger or freight to more efficient modes of transportation.

### UNDERSTANDING EMISSIONS: 1-TON OF CO<sub>2</sub> EMISSIONS

“So, when you drive a mile, the carbon dioxide emitted fills up a 2' x 2' x 2' space, or less than the inside of your refrigerator, and weighs about a pound. If you found a 2200 square-foot single-story house with 8-foot ceilings -- and filled it up with carbon dioxide, you'd get your ton.” (Source/Citation: Sherry Listgarten;

[https://www.paloaltoonline.com/blogs/p/2019/12/01/what-is-a-ton-of-carbon-anyway;](https://www.paloaltoonline.com/blogs/p/2019/12/01/what-is-a-ton-of-carbon-anyway;12/01/2019)

12/01/2019)

### QUANTITATIVE SCORING REFERENCES AND ASSUMPTIONS

In order to cost effectively expend CRP funding and support LADOTD/NLCOG (MPO) Performance Measures/Targets, projects/programs are evaluated and rated (scored)

utilizing rational and/or required assumptions, recognized scientific analysis and studies, and a defined scoring schema or rubric.

- Recommended economic values for reducing emissions of CO2 (i.e., Benefit calculations) are shown in Appendix A, Table A-1.
- CO2 emissions reduction amounts are cited from scientific/statistically significant sourced studies and/or analysis.
- Because GHG emissions can have long-lasting, even intergenerational impacts, unlike all other categories of benefits (including reductions in other emissions) and costs, benefits from reductions in CO2 emissions should be discounted at a **3 percent rate (0.03) per year.**

### EXAMPLE EMISSIONS BENEFIT CALCULATION

By employing the recommended methodology cited in Appendix A, benefits from reducing CO2 emissions should be estimated using the standard benefit calculation. This calculation entails multiplying the quantity of reduced CO2 emissions, in the project's implementation year, by the dollar value of avoiding each ton of CO2 emissions in that year. The standard benefit calculation for CO2 emissions is as follows:

$$\text{CO2 Reductions Benefit} = \text{Quantity Reduced} \times \text{Monetized Value in a given year}$$

To better understand the standard benefit calculation as it applies to CO2 emissions, two local CRP project examples are outlined below. For all CRP project submittals, NLCOG Staff

*Example 1 – Bossier City, LA. submitted an eligible CRP project, for fiscal year 2025, that entails retrofitting their fleet of twenty (2) diesel powered dump-trucks with emissions reducing components/parts. Each one of the diesel emissions reduction kits costs \$10,000 and reduces CO2 by 180.0 metric tons annually:*

*Quantity Reduced = 20 diesel vehicles x 180 metric tons annually = 3,600 metric tons CO2  
Monetized Value of annual CO2 damages (year 2025) = \$59 (from Appendix A)*

*3,600 (metric tons) x \$59 (yr. 2025) = \$212,400 (CO2 reductions benefit in year 2025)  
To calculate the present value of the benefit, apply a 3% discount rate.*

*Benefit Present Value year 2024 = \$212,400 - (\$212,400 (yr. 2025) \* (0.03))  
= **\$206,028 CO2 Reduction Benefit in year 2024***

*Overall Project Costs: 20 retrofit kits x \$10,000 per kit = \$200,000  
**Generalized Cost to CO2 Benefit Ratio: \$206,028 / \$200,000 = 1.03***

Example 2 – Shreveport, LA. submitted an eligible CRP project, for fiscal year 2026, and its scope of work consists of the replacement of outdated high-pressure sodium (HPS) light fixtures with LED type illumination fixtures along a five (5) mile, arterial, surface street corridor. A total of 125 lamps, along with the associated electrical feed improvements, are planned to be changed out to LED illumination. Each LED, cobra style, lighting kit costs \$1,000, and the total cost of electrical feed improvements is \$600,000.

Per lamp, CO2 emissions are estimated to be reduced by 107.0 metric tons annually\*:

Quantity Reduced = 125 (Lamps) x 107 metric tons annually = 13,375 metric tons CO2

Monetized Value of annual CO2 damages (year 2026) = \$60 (from Appendix A)

13,375 (metric tons) x \$60 (yr. 2026) = \$802,500 (CO2 reductions benefit in year 2026)

To calculate the present value of the benefit, apply a 3% discount rate

Benefit Present Value year 2024 =  $(\$802,500 - (\$802,500 \text{ (yr. 2026)} * (0.03)))^2$

**= \$755,072.25 CO2 Reduction Benefit in year 2024**

Overall Project Costs: (125 LED Lamps x \$1,000 per Lamp) + (\$600,000 electrical infrastructure upgrades) = \$725,000

**Generalized Cost to CO2 Benefit Ratio: \$755,072.25 / \$725,000 = 1.04**

\* **Source/Citation:** George Allwyn, R.; Al Abri, R.; Malik, A.; Al-Hinai, A. Economic Analysis of Replacing HPS Lamp with LED Lamp and Cost Estimation to Set Up PV/Battery System for Street Lighting in Oman. *Energies* **2021**, *14*, 7697.

<https://doi.org/10.3390/en14227697>

*Please note, NLCOG Staff is responsible for the calculation of the CO2 emissions reduction benefit, based upon nationally recognized and/or accepted scientific study and data sources.*

*– please refer to Appendix A, as well as determination of the generalized cost to benefit ratio for each respective CRP submitted project or program.*

## QUANTITATIVE SCORING RUBRIC

Once a generalized cost to benefit ratio has been calculated, scoring is assigned that correlates with the level of expected CO2 emissions reduction. Projects that exhibit a high generalized cost to benefit ratio, over 1.2 or 20% more benefit than cost, are awarded the maximum amount of points (i.e., 50 points).

**Table 1.1 – Submitted Project/Program Cost Benefit Scoring Rubric**

Calculated Cost-Benefit Ratio Ranges:	Cost to Benefit Scoring Rubric		
	< 1.0	1.0 – 1.2	> 1.2
Ranges Defined:	Project costs more than CO2 reduction benefits.	CO2 reduction benefits are equal to 20% more than total project cost.	CO2 reduction benefits are greater than 20% more than total project cost.
Points Assigned:	10 pts.	25 pts.	50 pts.

## EVALUATION METHODOLOGY – TRACK #1

### PROJECT'S OVERALL EXPECTED BREADTH OF EMISSIONS REDUCTION (25% of total score)

Not only is a calculated generalized submitted project cost to benefit ratio crucial to the success of CRP projects in Northwest Louisiana, but the overall breadth, or expected area of impact, a project has upon CO2 emissions is a significant factor. All CRP projects impact emissions differently, from their level of reduction to their geographic area of effectiveness.

*Example (1) – To illustrate this variability, a transit provider proposes a project that replaces 3 Diesel powered buses along a rapid transit corridor with 3 electric powered buses. Given this example, the amount of CO2 emissions reduction is nearly negligible across the entire region, therefore, the project's primary area of impact is along the*

buses' rapid transit corridor. If the transit system submitted a project that entails the phased replacement of 75 diesel powered buses with electric type buses, the project is considered to have regional impact and would be awarded 25 points (as shown in Table 1.2 following page).

## ENVIRONMENTAL JUSTICE CONSIDERATIONS – CRP SCORING

NLCOG accounts for environmental justice issues within the CRP project selection process by considering the current state of regional transportation planning, where the relative distribution of costs and benefits from transportation investment strategies and policies among different segments of society. NLCOG's goal is to implement transportation improvement projects (i.e., investments) across Northwest Louisiana in an equitable and cost-effective manner.

A second example illustrates the awarding of bonus points for "Corridor Level" improvement projects that are located within defined low income and/or significant minority population areas. **NLCOG's current Environmental Justice report for Northwest Louisiana\*** identifies 2020 Census Tracts that exhibit significant disadvantaged populations that are low income, high percentage minority, or both.

\* Source: [http://www.nlcog.org/pdfs/library/TITLEVI/FY2021TitleVI\\_Update.pdf](http://www.nlcog.org/pdfs/library/TITLEVI/FY2021TitleVI_Update.pdf)

*Example (2) – To demonstrate equity considerations within the CRP project evaluation process, we'll utilize the previous example of a large urban transit provider. The transit provider proposes a project that replaces 3 Diesel powered buses along a rapid transit corridor with 3 electric powered buses. Under this scenario, the rapid transit corridor traverses a Census Tract that contains a resident 70% minority and 42% impoverished (i.e., "Poverty" designation) population. This project meets the scoring guideline of a "Corridor Level + EJ Area" improvement project and will be awarded 10 points.*

**Table 1.2 – CRP Project/Program Primary Area of Impact Scoring**

<b>Submitted Project or Program Type</b>	<b>Corridor Level</b>	<b>Corridor Level + EJ Area</b>	<b>County or Parish Level</b>	<b>Regional Level</b>
<i>Establish/Operate traffic monitoring, management, and control facility</i>	5 pts.	10 pts.	15 pts.	25 pts.
Public transportation projects	5 pts.	10 pts.	15 pts.	25 pts.
<i>Alternative on/off-road projects (pedestrians /bicyclists/other non-motor)</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Advanced transportation / congestion management tech.</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>ITS/vehicle to infrastructure communications equipment</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Lighting/Traffic Control Device replacement w/energy-efficient devices</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Congestion pricing/vehicle shifting to non-peak hours or other transportation modes</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Reduction of environ. / community impacts from freight movements</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Deploying alternative fuel vehicles</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Diesel engine retrofit</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Projects aimed at improving traffic flow eligible under CMAQ program</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>Reduction of emissions at port facilities</i>	5 pts.	10 pts.	15 pts.	25 pts.
<i>STBG-eligible projects that reduce emissions (per capita or econ. basis)</i>	5 pts.	10 pts.	15 pts.	25 pts.

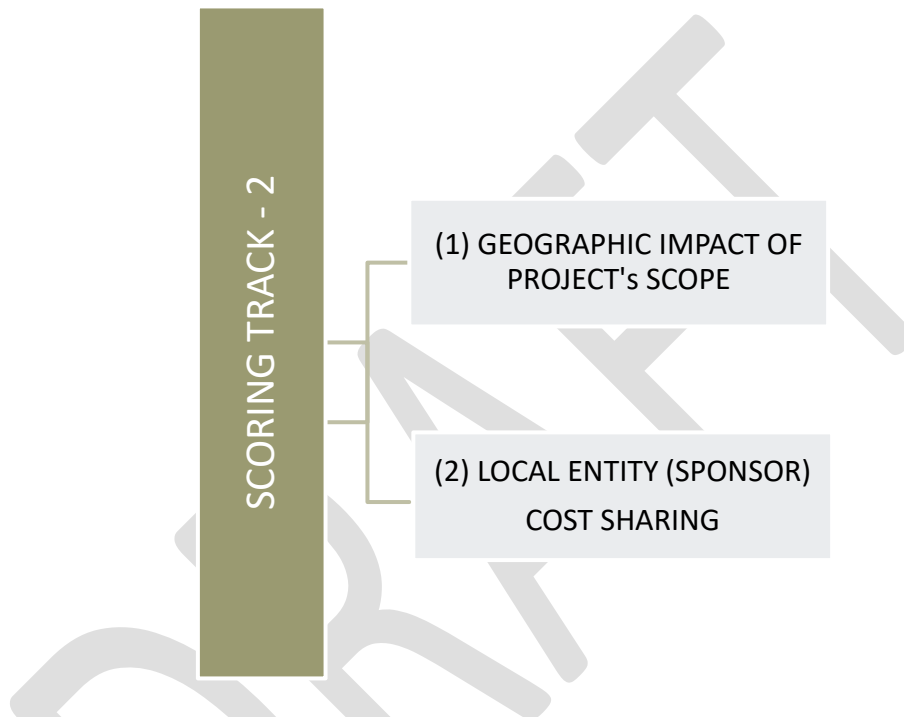
NLCOG Staff is responsible for determining the appropriate level of geographic impact upon CO2 emissions each submitted CRP project or program will provide.

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## Track 2 – Qualitative Methodology

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**Figure 1.4 – Qualitative Scoring Track (2) Methodology**



The rationale behind developing a separate scoring approach is to account for submitted projects that are difficult to quantify CO<sub>2</sub> emissions cost reductions. For example, some proposed improvements lend themselves to easily calculate CO<sub>2</sub> reductions, for instance deploying alternative fuel vehicles or a diesel engine retrofit program. Other proposals cannot be easily quantified, such as establishing or operating a traffic monitoring, management, and control facility or program.

Since all submitted CRP projects will provide information concerning their area of impact, NLCOG Staff will utilize an identical scoring category to the one described in scoring Track #1 (*please refer to Track #2 - Table 1.3 for project scoring schedule*).



## EVALUATION METHODOLOGY – TRACK #2

### PROJECT'S OVERALL EXPECTED BREADTH OF EMISSIONS REDUCTION (75% OF TOTAL SCORE)

However, under Track #2 this scoring category will account for 75% of the project's total score. The scoring rationale is identical to what was described under Track #1, but the point values are raised since it accounts for 75% of the project's score.

**Table 1.3 – CRP Program Primary Area of Impact Scoring – Track #2**

<b>Submitted Project or Program Type</b>	<b>Corridor Level</b>	<b>Corridor Level + EJ Area</b>	<b>County or Parish Level</b>	<b>Regional Level</b>
<i>Establish/Operate traffic monitoring, management, and control facility</i>	25 pts.	40 pts.	50 pts.	75 pts.
Public transportation projects	25 pts.	40 pts.	50 pts.	75 pts.
<i>Alternative on/off-road projects (pedestrians /bicyclists/other non-motor)</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Advanced transportation / congestion management tech.</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>ITS/vehicle to infrastructure communications equipment</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Lighting/Traffic Control Device replacement w/energy-efficient devices</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Congestion pricing/vehicle shifting to non-peak hours or other transportation modes</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Reduction of environ. / community impacts from freight movements</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Deploying alternative fuel vehicles</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Diesel engine retrofit</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Projects aimed at improving traffic flow eligible under CMAQ program</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>Reduction of emissions at port facilities</i>	25 pts.	40 pts.	50 pts.	75 pts.
<i>STBG-eligible projects that reduce emissions (per capita or econ. basis)</i>	25 pts.	40 pts.	50 pts.	75 pts.

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## *BOTH TRACK #1 AND TRACK #2*

### *Local Sponsor Funding Support*

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The intent of gathering this type of data from the local project sponsor is to determine their level of funding commitment towards the proposed CRP project/program. Local sponsors (i.e., entity) who are willing to invest more than the minimum 20% support match on the project’s total cost will be rewarded accordingly under the “Cost Sharing” scoring rubric.

The Carbon Reduction Program (CRP) funding category requires a mandatory 20% local match. If the project’s local sponsor commits 25% local match of the project’s total cost, it will be awarded 15 points. If the project consists of a 35% funding commitment by the local sponsor, the submitted project will receive the entire 25 points available.

**Table 1.4 – CRP Local Cost Sharing – Scoring Rubric**

<b>Local Sponsor Cost Sharing - Scoring Rubric</b>	<b>Points Awarded</b>
Local Sponsor will meet the minimum 20% match support requirement (CRP>200K program funding)	5 pts.
Local Sponsor will commit to providing between 25% to 29.9% match support	15 pts.
Local Sponsor will commit to providing 30% or greater match support	25 pts.
<b>Maximum Total Points Available:</b>	<b>25 points</b>
<u>List Any Documentation (e.g. Resolutions, CIP budget page, etc.)</u>	

## APPENDIX A

PROVIDED BELOW IS THE REFERENCE UTILIZED TO DETERMINE COSTS PER METRIC TON, BY FUTURE YEAR, OF CO<sub>2</sub> EMISSIONS.



**U.S. Department  
of Transportation**

**BENEFIT-COST ANALYSIS GUIDANCE FOR DISCRETIONARY GRANT PROGRAMS  
OFFICE OF THE SECRETARY  
U.S. DEPARTMENT OF TRANSPORTATION JANUARY 2023**

**TABLE A.1 – DAMAGE COSTS FOR EMISSIONS PER METRIC TON\***

<b>Emission:</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM<sub>2.5</sub>**</b>	<b>CO<sub>2</sub></b>	
<b>Year</b>					<i>Technical Support Document: Estimating the Benefit per Ton of Reducing PM<sub>2.5</sub> Precursors from 17 Sectors (February 2018)</i> ”
2022	\$16,600	\$44,300	\$796,700	\$56	<a href="https://www.epa.gov/sites/default/files/2018-02/documents/sourceapportionmentbpttsd2018.pdf">https://www.epa.gov/sites/default/files/2018-02/documents/sourceapportionmentbpttsd2018.pdf</a>  NO <sub>x</sub> , SO <sub>x</sub> , and PM <sub>2.5</sub> values are inflated from 2015 to 2021 dollars using the GDP deflator.  <i>Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (February 2021)</i> <a href="https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf">https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf</a>  <b>Note:</b> Fuel saved (gasoline, diesel, natural gas, etc.) can be converted into metric tons of emissions using EPA guidelines available at <a href="https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references">https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references</a>  <b>Note:</b> The recommended values for reducing CO <sub>2</sub> emissions reported in Table A-6 represent the values of future economic damages that can be avoided by reducing emissions in each future year by one metric ton. After using per-ton values to estimate the total value of reducing CO <sub>2</sub> emissions in any <i>future year</i> , the result must be further discounted to its present value as of the analysis year used in the BCA, also using a <b>3 percent</b> discount rate.
2023	\$16,800	\$45,100	\$810,500	\$57	
2024	\$17,000	\$46,000	\$824,500	\$58	
2025	\$17,200	\$46,900	\$838,800	\$59	
2026	\$17,500	\$47,800	\$852,100	\$60	
2027	\$17,900	\$48,700	\$865,600	\$61	
2028	\$18,200	\$49,500	\$879,400	\$62	
2029	\$18,600	\$50,400	\$893,400	\$63	
2030	\$18,900	\$51,300	\$907,600	\$65	
2031	\$18,900	\$51,300	\$907,600	\$66	
2032	\$18,900	\$51,300	\$907,600	\$67	
2033	\$18,900	\$51,300	\$907,600	\$68	
2034	\$18,900	\$51,300	\$907,600	\$69	
2035	\$18,900	\$51,300	\$907,600	\$70	
2036	\$18,900	\$51,300	\$907,600	\$72	
2037	\$18,900	\$51,300	\$907,600	\$73	
2038	\$18,900	\$51,300	\$907,600	\$74	
2039	\$18,900	\$51,300	\$907,600	\$75	
2040	\$18,900	\$51,300	\$907,600	\$76	
2041	\$18,900	\$51,300	\$907,600	\$78	
2042	\$18,900	\$51,300	\$907,600	\$79	
2043	\$18,900	\$51,300	\$907,600	\$80	
2044	\$18,900	\$51,300	\$907,600	\$81	
2045	\$18,900	\$51,300	\$907,600	\$82	
2046	\$18,900	\$51,300	\$907,600	\$84	
2047	\$18,900	\$51,300	\$907,600	\$85	
2048	\$18,900	\$51,300	\$907,600	\$86	
2049	\$18,900	\$51,300	\$907,600	\$87	
2050	\$18,900	\$51,300	\$907,600	\$88	

\*Applicants should carefully note whether their emissions data is reported in short tons or metric tons. A metric ton is equal to 1.1015 short tons.

\*\*Applicants should be careful to not apply the PM<sub>2.5</sub> value to estimates of total emissions of PM<sub>10</sub>.

## APPENDIX B

### READILY AVAILABLE SOURCES/CITATIONS FOR RETROFIT, UPGRADE, OR REPLACEMENT TECHNOLOGIES THAT REDUCE CO<sub>2</sub> EMISSIONS

Technological Improvement Citation/URL Link	CO <sub>2</sub> Reduction Benefit		
	Existing CO <sub>2</sub> Source	CO <sub>2</sub> Reduction Technology	CO <sub>2</sub> Emission Reduction (per Unit)
Roadway Lighting:			
Replace existing illumination (lamps) with LED type lamps / George Allwyn, R.; Al Abri, R.; Malik, A.; Al-Hinai, A. Economic Analysis of Replacing HPS Lamp with LED Lamp and Cost Estimation to Set Up PV/Battery System for Street Lighting in Oman. <i>Energies</i> <b>2021</b> , <i>14</i> , 7697. <a href="https://doi.org/10.3390/en14227697">https://doi.org/10.3390/en14227697</a>	High-Pressure Sodium (HPS)	LED	107 metric tons / annually
Diesel Engine Replacement Program:			
Transit diesel engine replacement with lower CO <sub>2</sub> emitting powertrains. <a href="https://www.proterra.com/products/transit-buses/fuel-economy/">https://www.proterra.com/products/transit-buses/fuel-economy/</a>	Typical Bus Diesel Engine (103,978 metric tons / annually)	CNG Powered (89,005 metric tons / annually)	14,973 metric tons / annually
Transit diesel engine replacement with lower CO <sub>2</sub> emitting powertrains. <a href="https://www.proterra.com/products/transit-buses/fuel-economy/">https://www.proterra.com/products/transit-buses/fuel-economy/</a>	Typical Bus Diesel Engine (103,978 metric tons / annually)	Hybrid Powered (74,032 metric tons / annually)	29,946 metric tons / annually
Bus diesel engine replacement with lower CO <sub>2</sub> emitting powertrains. <a href="https://www.proterra.com/products/transit-buses/fuel-economy/">https://www.proterra.com/products/transit-buses/fuel-economy/</a>	Typical Bus Diesel Engine (103,978 metric tons / annually)	Electric Powered (0 metric tons / annually)	103,978 metric tons / annually
Diesel Engine Idling Reduction Technology (IRT):			
Real-world energy use and emission rates for idling long-haul trucks and selected idle reduction technologies. <i>H Christopher Frey<sup>1</sup>, Po-Yao Kuo;</i> <a href="https://pubmed.ncbi.nlm.nih.gov/19645270/">https://pubmed.ncbi.nlm.nih.gov/19645270/</a>	Long-Haul Diesel Truck Idling (19.1 metric tons / annually)	Program to Add Auxiliary Power Units (APUs) hookups at Interstate Rest Areas or Private Truck Stops (# of APUs installed)	Average Idling CO <sub>2</sub> Emissions Reduction (40%; 19.1 metric tons * 0.40 = 11.46 metric tons annually)

Technological Improvement Citation/URL Link	CO2 Reduction Benefit		
	Existing CO2 Source	CO2 Reduction Technology	CO2 Emission Reduction (per Unit)
Intelligent Transportation Systems (ITS):			
Intelligent Transportation Systems and Greenhouse Gas Reductions <a href="#">Matthew J. Barth, Guoyuan Wu &amp; Kanok Boriboonsomsin;</a> <a href="https://link.springer.com/article/10.1007/s40518-015-0032-y">https://link.springer.com/article/10.1007/s40518-015-0032-y</a>	Existing TSO&M Features	Application of various ITS improvement projects	In General, location, corridor or system- wide ITS improvements will yield between 5%- 15% reduction in CO2 emissions
Diversion to Alternative Transportation Modes:			
Current EPA web document: Greenhouse Gas Emissions from a Typical Passenger Vehicle. <a href="https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockery=P1017FP5.pdf">https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockery=P1017FP5.pdf</a>	Typical Passenger Vehicle CO2 Emissions / Year (4.6 metric tons / annually)	Project's Estimated Number of Vehicles Diverted To Zero or Reduced CO2 Emissions Modes (Bicycle, E-bike, E- Scooter or Bike Share Program, Transit)	Project Dependent: 4.6 metric tons annually / vehicle diverted Or Less