



COVER LETTER: GREEN STORMWATER INFRASTRUCTURE MAINTENANCE COST MODEL

1. PURPOSE

Green stormwater infrastructure (GSI) has become an integral part of urban watershed management in many cities. The benefits of GSI are quantifiable and well established. Monitoring and modeling of GSI has highlighted its performance in the areas of peak flow reduction and runoff volume reduction. The continued long-term performance of GSI relies on the ability of municipal agencies to appropriately maintain and operate these facilities. Municipal managers are therefore in need of a tool to forecast long-term maintenance obligations in terms of both labor and dollar costs. The Green Stormwater Infrastructure Maintenance Cost Model is the result of an analysis performed by the San Francisco Public Utilities Commission (SFPUC) Utility Planning Division to assist the SFPUC in strategic planning and budgeting for the maintenance of GSI. The maintenance cost model is intended to be used as a planning tool to help inform the SFPUC regarding the scale of existing, planned, proposed, and future GSI maintenance burdens, and to help plan and budget for future maintenance obligations in terms of both labor and dollar costs. The purpose of this cover letter is to outline the assumptions of the maintenance cost model and to provide guidance for sister municipal stormwater agencies of the SFPUC that would like to apply the model outside of the City and County of San Francisco. We invite you to use the maintenance cost model for GSI planning and budgeting in your municipality after carefully reviewing the following assumptions and directions.

2. MAINTENANCE COST MODEL ASSUMPTIONS

The maintenance cost model was created with the intention that it be used for planning purposes in the City and County of San Francisco. The following assumptions were made during the creation of the model, many of which are specific to San Francisco. Please carefully review and evaluate the following assumptions and only proceed with the use of the maintenance model if these categories can be adequately adapted to your municipality. Results obtained from this model by municipalities that significantly differ from the conditions outlined below will not accurately reflect GSI maintenance obligations.

1. The cost of maintenance is built on the assumption that maintenance will be performed in a Mediterranean climate, marked by wet winters and dry summers. San Francisco receives an average of 22 inches of precipitation per

London N. Breed
Mayor

Ann Moller Caen
Vice President

Francesca Vietor
Commissioner

Anson Moran
Commissioner

Ike Kwon
Commissioner

Harlan L. Kelly, Jr.
General Manager



year. Therefore, estimates for maintaining GI assume an average corresponding runoff volume for each stormwater Best Management Practice (BMP). The maintenance model is not intended for use in humid, sub-tropical, or cold winter climates.

2. The maintenance model assumes that maintenance is performed on easily-accessible public assets in the right-of-way, not private properties.
3. The model assumes a standard escalation rate and discount rate that may differ between municipalities.
4. The model includes a finite list of specific BMP types and sub-types. The specific definition of these BMP types may differ between municipalities. Please refer to the GSI Maintenance Cost Model Technical Memorandum for detailed definitions of BMP types and sub-types.
5. The model assumes specific local labor costs for San Francisco. This hourly wage likely differs between municipalities. Please refer to the maintenance model User Guide for more information on customizing the hourly wage in the model.
6. The model assumes a specific field crew for each BMP type. For example, it is assumed that bioretention sites will require three workers (two gardeners and one supervisor) that can handle one site in one full working day during regular maintenance and one site in two full working days for annual rehabilitation visits. Please refer to Appendix C of the Technical Memorandum for specific field crews for each BMP.
7. The model assumes a BMP-specific preparation time and mobilization time. Please refer to Appendix C of the Technical Memorandum for specific preparation and travel times for each BMP.
8. Model outputs include: annual budget requirements (20 years), net present value of the 20-year budget forecast, and annual staffing requirements in terms of labor hours and Full Time Employees (FTE).

If the above stated assumptions can be adapted to your municipality, please proceed to the maintenance model User Guide, which provides further information on customizing the maintenance model. Please use professional discretion in adapting the maintenance model as a planning tool for your municipality to ensure the most accurate estimate of GSI maintenance obligations. Next steps in the development of the maintenance model will be to ground-truth the data assumptions using actual maintenance labor hours. If you find the maintenance model to be a useful tool, please consider reaching out to Michael Adamow, SFPUC GI Planning Specialist at madamow@sfwater.org, or Sarah Minick, SFPUC Utility Planning Division Manager at sminick@sfwater.org to share any available data on maintenance labor hours so that we may continue to refine this model.

Utility Planning Division
Wastewater Enterprise
San Francisco Public Utilities Commission