

Asset Management Planning – 2024 Forecast Updates

Comprehensive Infrastructure (All Assets) Analysis



PUBLIC SECTOR PARTNERS

December 2023

Milos Posavljak M.Sc., P.Eng.

Investment Engineer

Public Sector Partners for Progress (Non-Profit)

573 Guelph Street

Kitchener, ON

N2H 5Y2

Mallory Luey, CPA

Manager of Corporate Services/Treasurer

Township of Wainfleet

31940 Highway 3

Wainfleet, ON

L0S 1V0

1-Dec-2023

Re: Asset Management – 2024 Forecast Updates

Dear Ms. Luey,

Please find enclosed within this report and associated files:

1. Restructured Infrallect asset inventory to CityWide's asset inventory
2. Infrallect's annual expenditure limit breakdown according to Wainfleet's Approved 2023 Budget
3. Without versus with Covid Inflation 25-year forecasts for all asset classes

The restructuring of asset inventories was a significant undertaking that exceeded our \$1/capita budget. Due to our long standing partnership the cost of this update to Wainfleet will not exceed the original agreed upon budget of \$1/capita. However, we strongly encourage the Wainfleet AM Team to at their earliest convenience, take our latest asset management training, to ensure this report is interpreted correctly.

Provided that the asset inventory structure in Infrallect is more reflective of CityWide's, we strongly encourage Wainfleet to -if possible- be the "broker" between CityWide and Infrallect in making future asset management planning even more efficient for Wainfleet. For example, Infrallect is being used as an "add-on forecasting tool" to IBM's Maximo at the Ontario Clean Water Agency. The same can be done for CityWide.

Thank you and the Township of Wainfleet for years of successful asset management collaboration and research. We hope to continue the partnership in the future.

Kind regards,

A handwritten signature in black ink, appearing to read 'Milos', with a long horizontal flourish extending to the right.

Milos Posavljak

Contents

1.0 Restructuring of Asset Inventories 5

2.0 Without versus with Covid Inflation 25-Year Forecasts - All Asset Classes 7

Table 1: Breakdown of CityWide Inventory into Infrallect 5

Table 2: Breakdown of Approved 2023 Budget Envelopes 6

Figure 1 - Infrastructure (All Assets) - Network Performance without Covid Inflation 7

Figure 2 - Infrastructure (All Assets) - Expenditure Program Projection without Covid Inflation 7

Figure 3 - Infrastructure (All Assets) - Expenditure Program Projection without Covid Inflation (at 2 % inflation) 8

Figure 4 - Infrastructure (All Assets) - Network Performance with Covid Inflation 8

Figure 5 - Infrastructure (All Assets) - Expenditure Program Projection with Covid Inflation 9

Figure 6 - All Assets - Expenditure Program Projection with Covid Inflation (at 2 % inflation) 9

Figure 7 - All Assets - Covid Inflation Forecast minus without Covid Inflation Forecast 10

Figure 8 - All Assets - Covid Inflation Forecast minus without Covid Inflation Forecast (at 2 % inflation).. 10

Figure 9 - Infrastructure (All Assets) - Good Network Performance Decrease under Covid Inflation Forecast compared to without Covid Inflation Forecast 11

Figure 10 - Infrastructure (All Assets) - Poor Network Performance Increase under Covid Inflation Forecast compared to without Covid Inflation Forecast 11

Figure 11 - Bridges - Network Performance without Covid Inflation 12

Figure 12 - Bridges - Expenditure Program Projection without Covid Inflation 12

Figure 13 - Bridges - Network Performance with Covid Inflation 13

Figure 14 - Bridges - Expenditure Program Projection with Covid Inflation 13

Figure 15 - Equipment and Furnishings - Network Performance without Covid Inflation 14

Figure 16 - Equipment and Furnishings - Expenditure Program Projection without Covid Inflation 14

Figure 17 - Equipment and Furnishings - Network Performance with Covid Inflation 15

Figure 18 - Equipment and Furnishings - Expenditure Program Projection with Covid Inflation 15

Figure 19 - Facilities - Network Performance without Covid Inflation 16

Figure 20 - Facilities - Expenditure Program Projection without Covid Inflation 16

Figure 21 - Facilities - Network Performance with Covid Inflation 17

Figure 22 - Facilities - Expenditure Program Projection with Covid Inflation 17

Figure 23 - Fences & Sidewalks - Network Performance without Covid Inflation 18

Figure 24 Sidewalks - Expenditure Program Projection without Covid Inflation 18

Figure 25 - Fences & Sidewalks - Network Performance with Covid Inflation 19

Figure 26 - Fences & Sidewalks - Expenditure Program Projection with Covid Inflation 19

Figure 27 - Fields - Network Performance without Covid Inflation 20

Figure 28 - Fields - Expenditure Program Projection without Covid Inflation 20

Figure 29 - Fields - Network Performance with Covid Inflation 21

Figure 30 - Fields - Expenditure Program Projection with Covid Inflation 21

Figure 31 - Guardrails - Network Performance without Covid Inflation 22

Figure 32 - Guardrails - Expenditure Program Projection without Covid Inflation 22

Figure 33 - Guardrails - Network Performance with Covid Inflation.....	23
Figure 34 - Guardrails - Expenditure Program Projection with Covid Inflation.....	23
Figure 35 - Library Individual Assets - Network Performance without Covid Inflation.....	24
Figure 36 - Library Individual Assets - Expenditure Program Projection without Covid Inflation.....	24
Figure 37 - Library Individual Assets - Expenditure Program Projection with Covid Inflation	25
Figure 38 - Library Individual Assets - Expenditure Program Projection with Covid Inflation	25
Figure 39 - Parking - Network Performance without Covid Inflation.....	26
Figure 40 - Parking - Expenditure Program Projection without Covid Inflation.....	26
Figure 41 - Parking - Network Performance with Covid Inflation	27
Figure 42 - Parking - Expenditure Program Projection with Covid Inflation	27
Figure 43 - Parks & Land Improvements - Network Performance without Covid Inflation	28
Figure 44 - Parks & Land Improvements - Expenditure Program Projection without Covid Inflation	28
Figure 45 - Parks & Land Improvements - Network Performance with Covid Inflation.....	29
Figure 46 - Parks & Land Improvements - Expenditure Program Projection with Covid Inflation	29
Figure 47 - Roads - Network Performance without Covid Inflation	30
Figure 48 - Roads - Expenditure Program Projection without Covid Inflation	30
Figure 49 - Roads - Network Performance with Covid Inflation.....	31
Figure 50 - Roads - Expenditure Program Projection with Covid Inflation.....	31
Figure 51 - Sidewalks & Curbs - Network Performance without Covid Inflation	32
Figure 52 - Sidewalks & Curbs - Expenditure Program Projection without Covid Inflation	32
Figure 53 - Sidewalks & Curbs - Network Performance with Covid Inflation.....	33
Figure 54 - Sidewalks & Curbs - Expenditure Program Projection with Covid Inflation.....	33
Figure 55 - Signs - Network Performance without Covid Inflation.....	34
Figure 56 - Signs - Expenditure Program Projection without Covid Inflation.....	34
Figure 57 - Signs - Network Performance with Covid Inflation	35
Figure 58 - Signs - Expenditure Program Projection with Covid Inflation	35
Figure 59 - Streetlights - Network Performance without Covid Inflation	36
Figure 60 - Streetlights - Expenditure Program Projection without Covid Inflation	36
Figure 61 - Streetlights - Network Performance with Covid Inflation.....	37
Figure 62 - Streetlights - Expenditure Program Projection with Covid Inflation.....	37
Figure 63 - Vehicle - Network Performance without Covid Inflation	38
Figure 64 - Vehicle - Expenditure Program Projection without Covid Inflation	38
Figure 65 - Vehicle - Network Performance with Covid Inflation.....	39
Figure 66 - Vehicle - Expenditure Program Projection with Covid Inflation.....	39
Figure 67 - Cemeteries - Network Performance without Covid Inflation	40
Figure 68 - Cemeteries - Expenditure Program Projection without Covid Inflation	40
Figure 69 - Cemeteries - Network Performance with Covid Inflation.....	41
Figure 70 - Cemeteries - Expenditure Program Projection with Covid Inflation	41

1.0 Restructuring of Asset Inventories

In order to ensure maximized efficiency of PSAB 3150 information flow to forecasting mechanism, it was necessary to restructure Infrallect’s asset inventory to match more closely that of CityWide’s. Table 1 contains the details of the restructuring.

Table 1: Breakdown of CityWide Inventory into Infrallect

Asset Inventory in CityWide		Asset Inventory in Infrallect	
2022WIPDepreciation.xlsx		distributed accordingly	
2022CapitalLeaseDepreciation.xlsx		single asset forecasting limited	
2022LandDepreciation.xlsx		to be determined	
2022BridgesDepreciation.xlsx		Wainfleet_Bridges_LiveAMPlan.xlsm	
2022RadiosPagersDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022SmallEquipmentDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022SoftwareDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022BunkerGearDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022ComputersDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022EquipmentDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022FurnitureFixturesDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022LibraryBooksDepreciation.xlsx		Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	
2022BuildingsDepreciation.xlsx		Wainfleet_Facilities_LiveAMPlan.xlsm	
2022FencesSidewalksDepreciation.xlsx		Wainfleet_FencesSidewalks_LiveAMPlan.xlsm	
2022FieldsDepreciation.xlsx		Wainfleet_Fields_LiveAMPlan.xlsm	
2022GuardrailsDepreciation.xlsx		Wainfleet_Guardrails_LiveAMPlan.xlsm	
2022LibraryIndividualAssets-ML.xlsx		Wainfleet_LibraryIndividualAssets_LiveAMPlan.xlsm	
2022ParkingLotsDepreciation.xlsx		Wainfleet_Parking_LiveAMPlan.xlsm	
2022LightsDepreciation.xlsx		Wainfleet_ParksLandImprv_LiveAMPlan.xlsm	
2022OtherLandImpDepreciation.xlsx		Wainfleet_ParksLandImprv_LiveAMPlan.xlsm	
2022RoadBaseDepreciation.xlsx		Wainfleet_Roads_LiveAMPlan.xlsm	
2022RoadSurfaceDepreciation.xlsx		Wainfleet_Roads_LiveAMPlan.xlsm	
2022SidewalksCurbsDepreciation.xlsx		Wainfleet_SidewalksCurbs_LiveAMPlan.xlsm	
2022SignsDepreciation.xlsx		Wainfleet_Signs_LiveAMPlan.xlsm	
2022StreetLightsDepreciation.xlsx		Wainfleet_StreetLights_LiveAMPlan.xlsm	
2022VehicleDepreciation.xlsx		Wainfleet_Vehicle_LiveAMPlan.xlsm	
not applicable		Wainfleet_Cemeteries_LiveAMPlan.xlsm	

In order to properly forecast asset’s 25-year performance and corresponding expenditure, appropriate inflation factors had to be applied. Since the last update, Covid induced inflation has played a significant role. As such, Table 2 contains the replacement values of each asset class without and with Covid induced inflation. Without Covid Inflation, the replacement value of all assets is estimated at \$137,506,008, this is a 4.32% increase from the 2018/19 estimate of \$131,810,423. With Covid Inflation, the replacement value estimate is at \$235,411,259, or a 78.60% increase. Due to average treatment costs of assets being proportional to their replacement values, it was necessary to forecast both

scenarios. In Table 2, the second column from the right, contains the approved 2023 budgets for the respective asset classes. Asset classes with the same dollar amount indicated that they share that “funding envelope”, and that its value is distributed according to their respective replacement values, the results of which are shown in the last column on the right. These are the amounts entered into Infrallect before an investment scenario is run. If the resulting average annual spending is below that of the current approved budget, it does not mean that the budget is wrong, in fact the only forecast that is 100% reliable is the approved one-year budget. All that it means is that over the next 25-years there will be periods where the approved budget will be below of that which is current; provided that future annual updates of forecasts do not change the key variables of forecasting, which are assets’: current or starting performance, average treatment cost, annual deterioration, and treatment trigger. However, it is expected that they will change, hence why asset management is a continuous process of business improvement. Therefore, annual approved budgets greater than the current approved, can be expected as well.

With respect to inflation factors, for those assets’ which are available for purchase to the general public (i.e., Equipment, Furnishings, Vehicles) the Consumer Price Index published by the Bank of Canada was used. For construction industry assets, a mix of RS Mean’s Historical Construction Index, and Stats Canada’s Building Construction Index was used. All of which are contained within the “Input” tab of each Infrallect file.

Table 2: Breakdown of Approved 2023 Budget Envelopes

Asset Inventory in Infrallect	Replacement Value (\$) 2018 and/or as recorded in CityWide	Replacement Value (\$) 2023 without Covid Inflation	Replacement Value (\$) 2023 with Covid Inflation	Approved 2024 Budget Envelope (\$)	Infrallect Input Annual Expenditure Limit (\$)
Wainfleet_Bridges_LiveAMPlan.xlsm	11,368,298	11,588,479	20,735,062	3,030,480	342,948
Wainfleet_EquipmentFurnishings_LiveAMPlan.xlsm	3,162,691	3,859,832	3,859,832	836,690	591,721
Wainfleet_Facilities_LiveAMPlan.xlsm	20,938,317	21,278,560	35,801,024	577,400	539,666
Wainfleet_FencesSidewalks_LiveAMPlan.xlsm	179,151	300,964	536,340	3,030,480	8,907
Wainfleet_Fields_LiveAMPlan.xlsm	108,006	136,998	245,128	434,031	27,090
Wainfleet_Guardrails_LiveAMPlan.xlsm	247,539	470,237	769,162	3,030,480	13,916
Wainfleet_LibraryIndividualAssets_LiveAMPlan.xlsm	1,046,038	1,487,821	2,288,587	577,400	37,734
Wainfleet_Parking_LiveAMPlan.xlsm	1,380,767	1,764,206	3,156,664	3,030,480	52,210
Wainfleet_ParksLandImprv_LiveAMPlan.xlsm	1,546,731	1,612,562	2,621,167	434,031	318,873
Wainfleet_Roads_LiveAMPlan.xlsm	86,056,235	87,722,971	156,961,175	3,030,480	2,596,066
Wainfleet_SidewalksCurbs_LiveAMPlan.xlsm	159,157	312,547	559,236	3,030,480	9,250
Wainfleet_Signs_LiveAMPlan.xlsm	116,918	139,789	248,060	3,030,480	4,137
Wainfleet_StreetLights_LiveAMPlan.xlsm	325,325	573,171	1,020,439	3,030,480	16,962
Wainfleet_Vehicle_LiveAMPlan.xlsm	4,738,351	5,812,507	5,812,507	836,690	502,801
Wainfleet_Cemeteries_LiveAMPlan.xlsm	436,899	445,361	796,877	434,031	88,067
	131,810,423	137,506,008	235,411,259		

2.0 Without versus with Covid Inflation 25-Year Forecasts- All Asset Classes

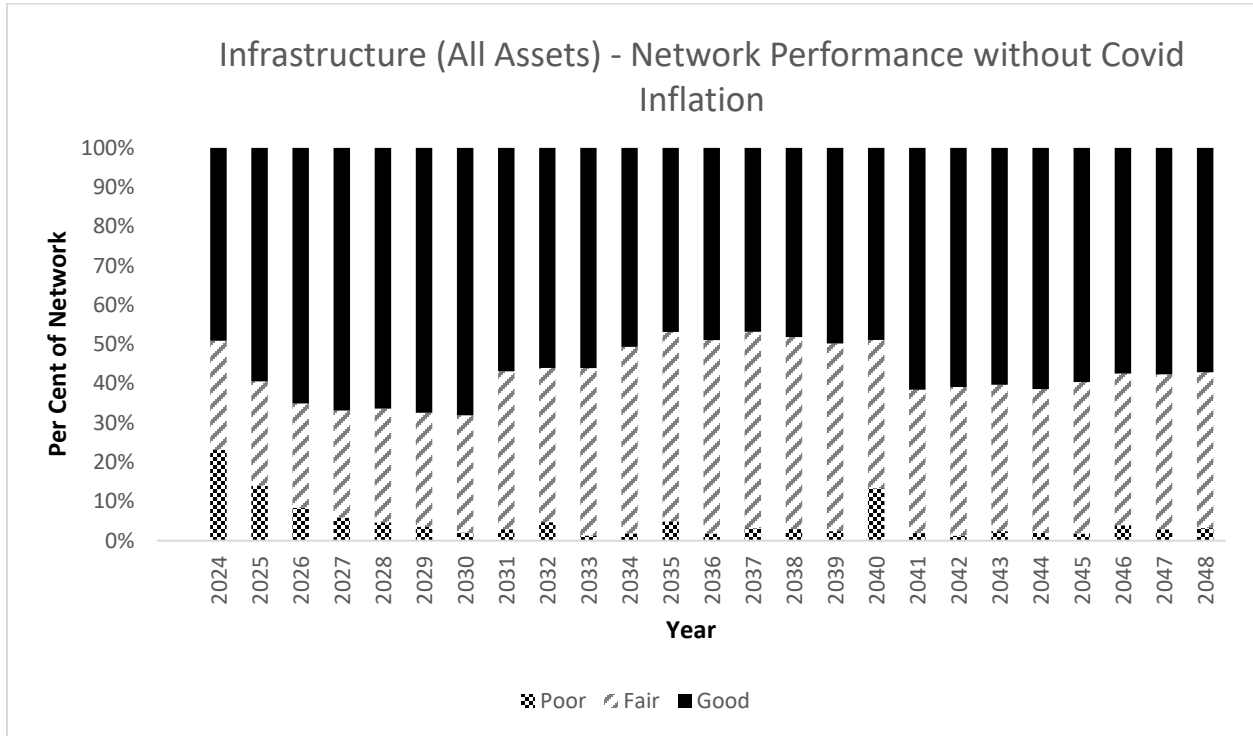


Figure 1 - Infrastructure (All Assets) - Network Performance without Covid Inflation

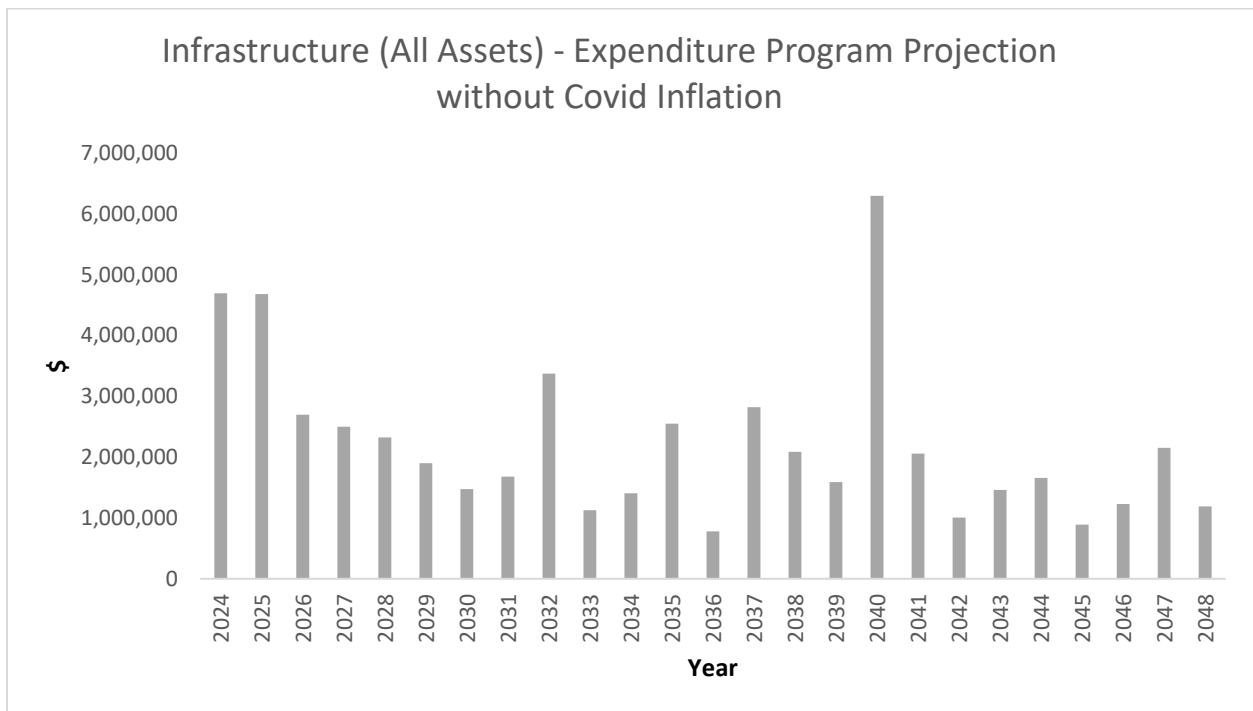


Figure 2 - Infrastructure (All Assets) - Expenditure Program Projection without Covid Inflation

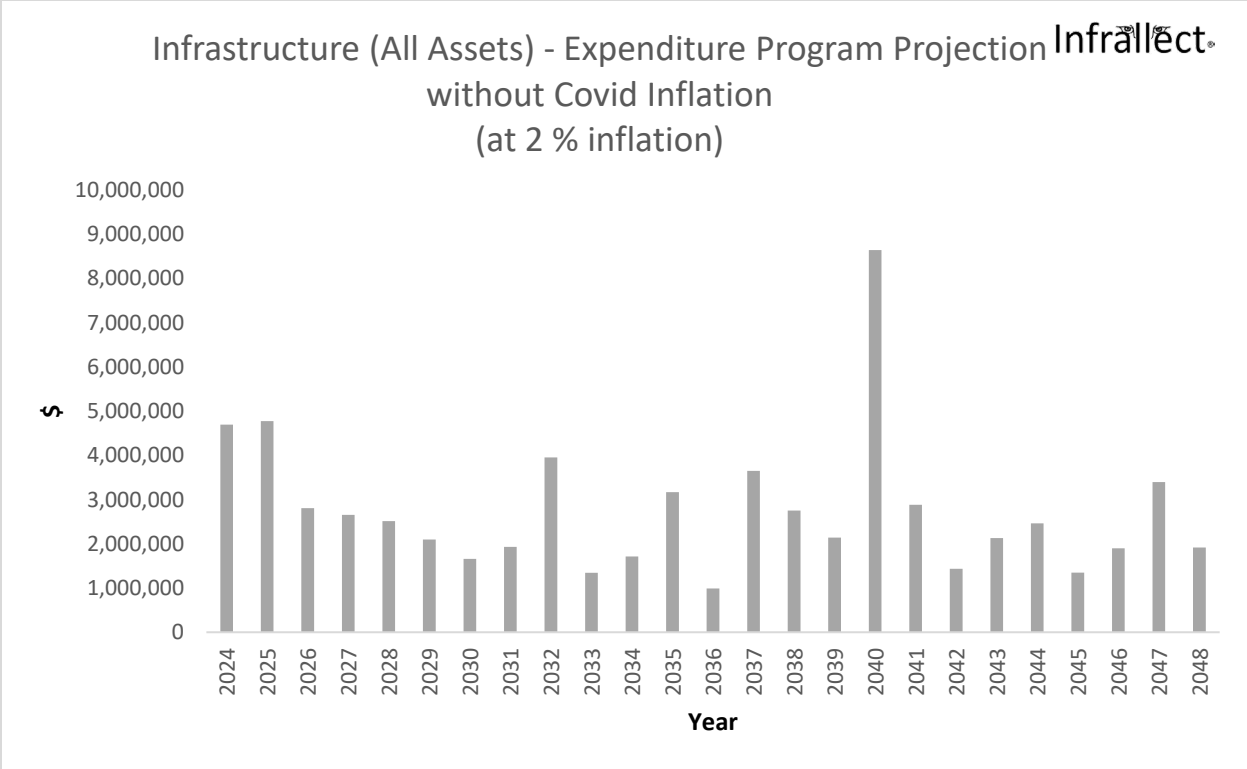


Figure 3 - Infrastructure (All Assets) - Expenditure Program Projection without Covid Inflation (at 2 % inflation)

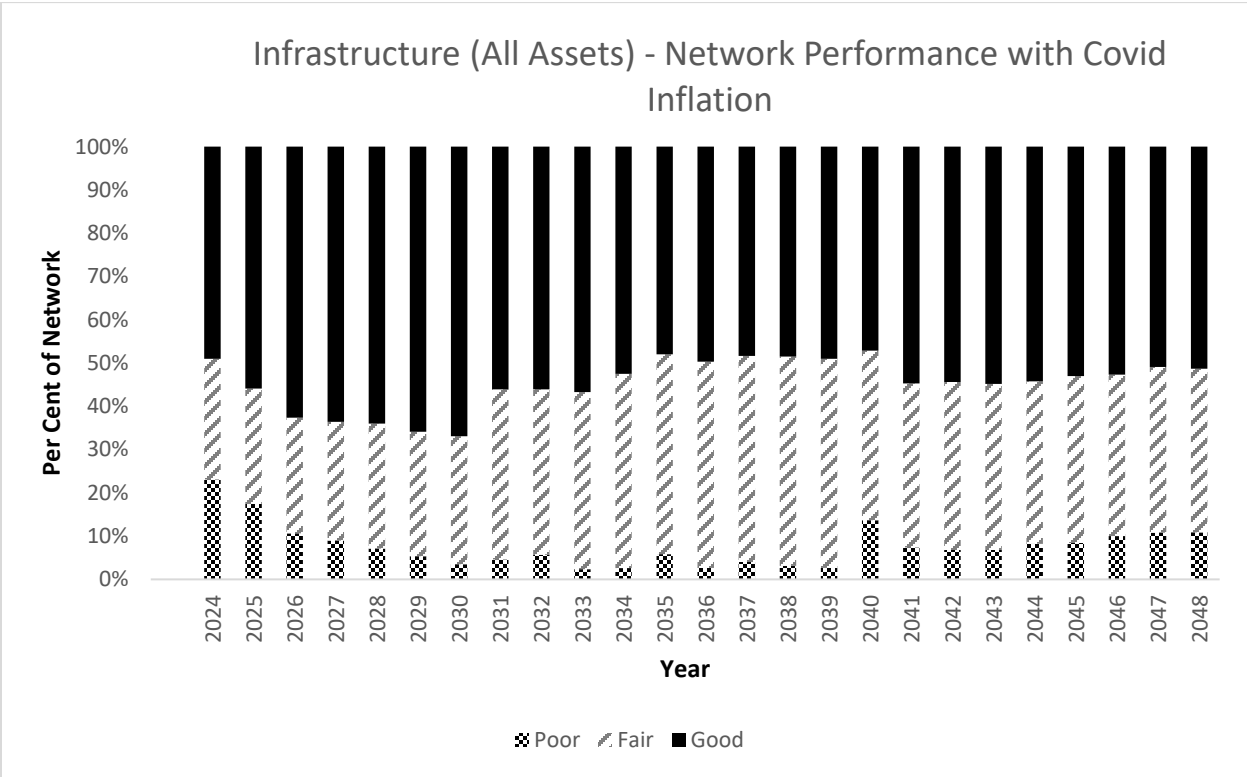


Figure 4 - Infrastructure (All Assets) - Network Performance with Covid Inflation

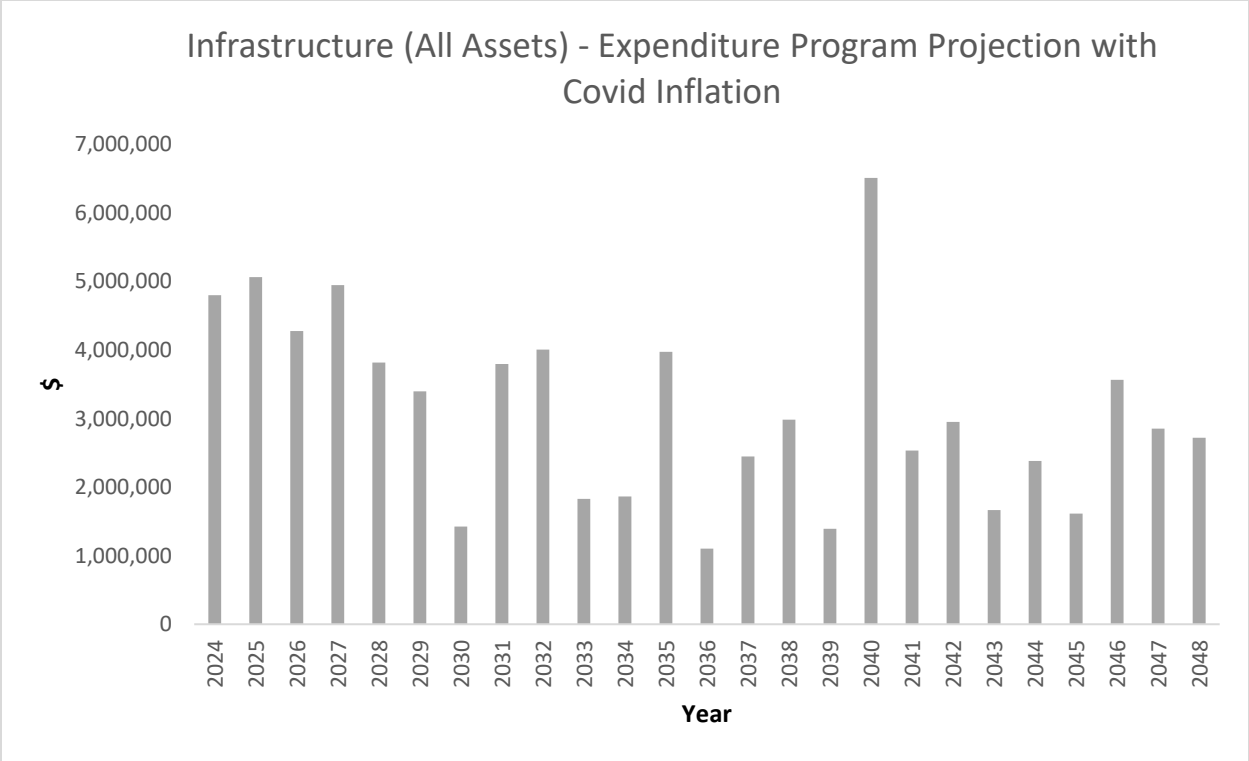


Figure 5 - Infrastructure (All Assets) - Expenditure Program Projection with Covid Inflation

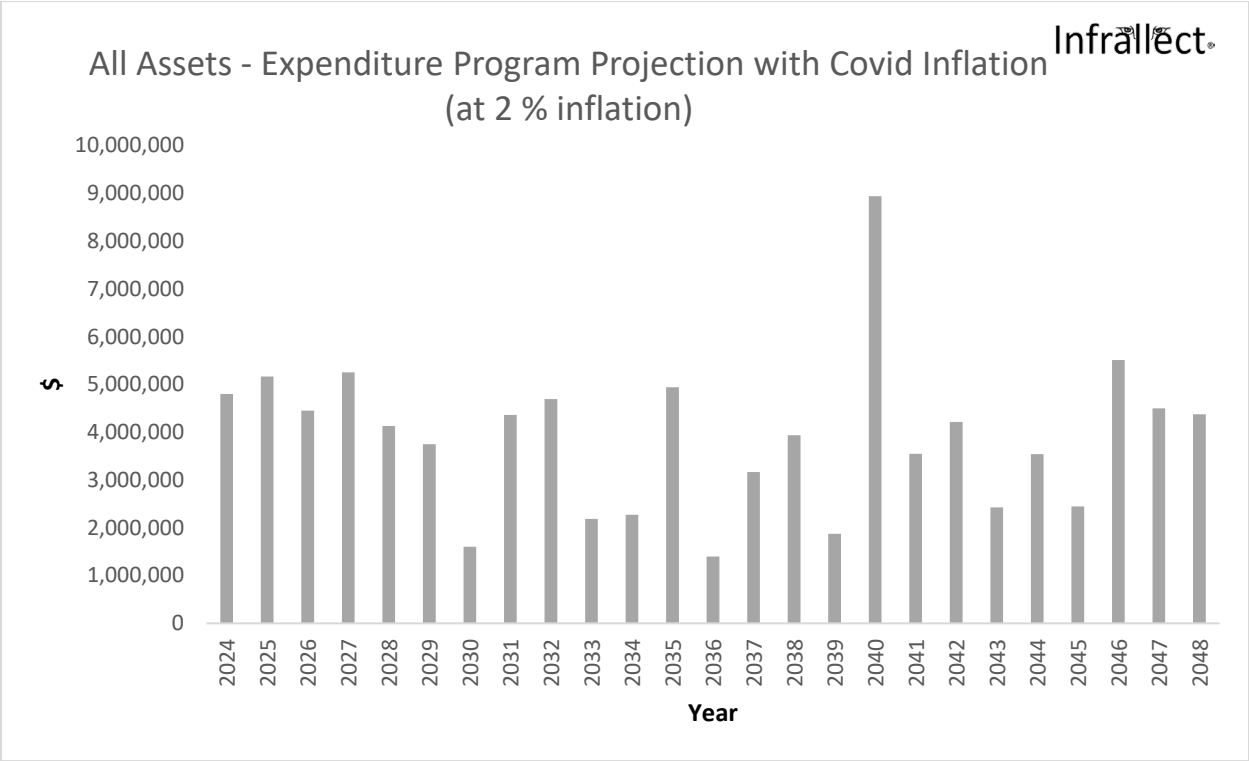


Figure 6 - All Assets - Expenditure Program Projection with Covid Inflation (at 2 % inflation)

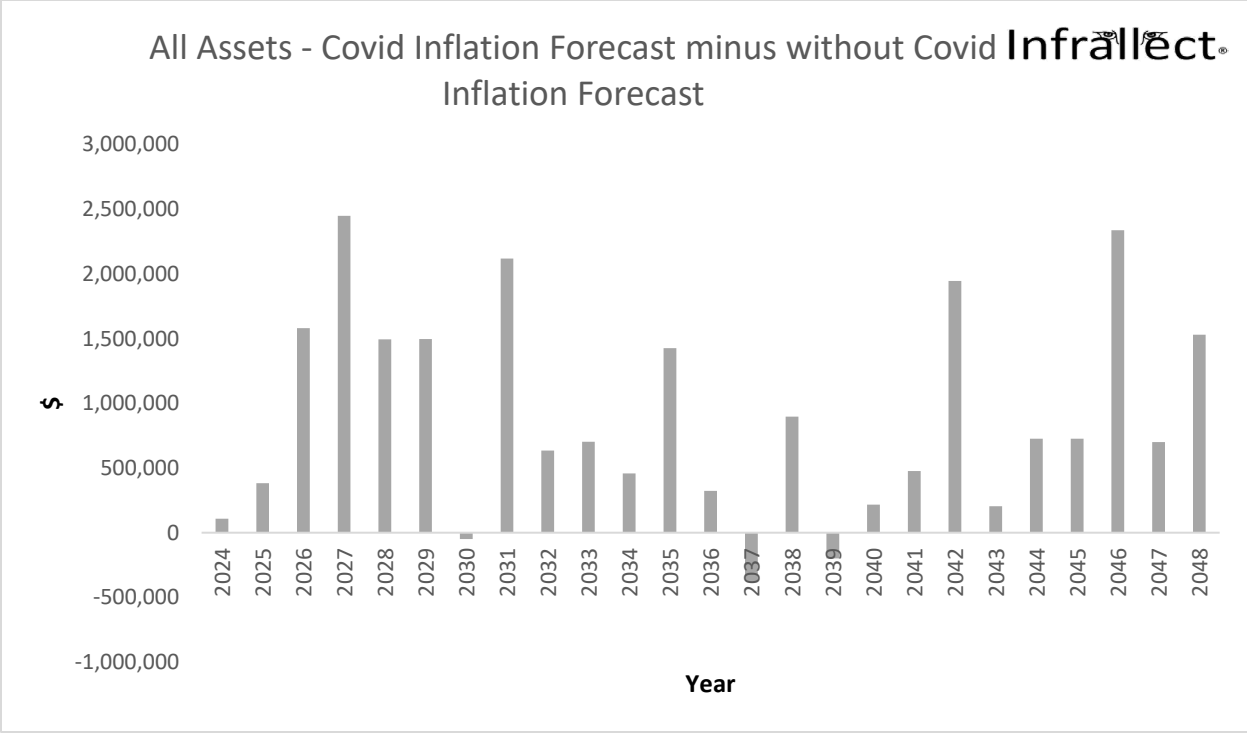


Figure 7 - All Assets - Covid Inflation Forecast minus without Covid Inflation Forecast

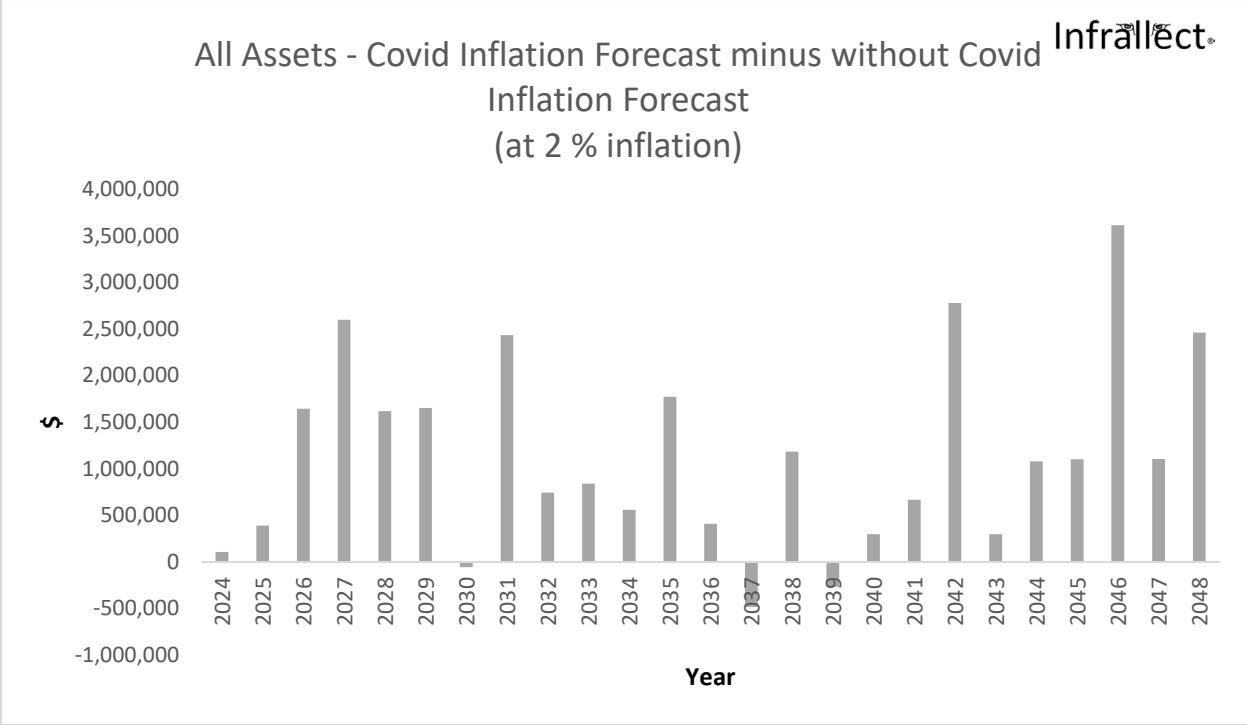


Figure 8 - All Assets - Covid Inflation Forecast minus without Covid Inflation Forecast (at 2 % inflation)

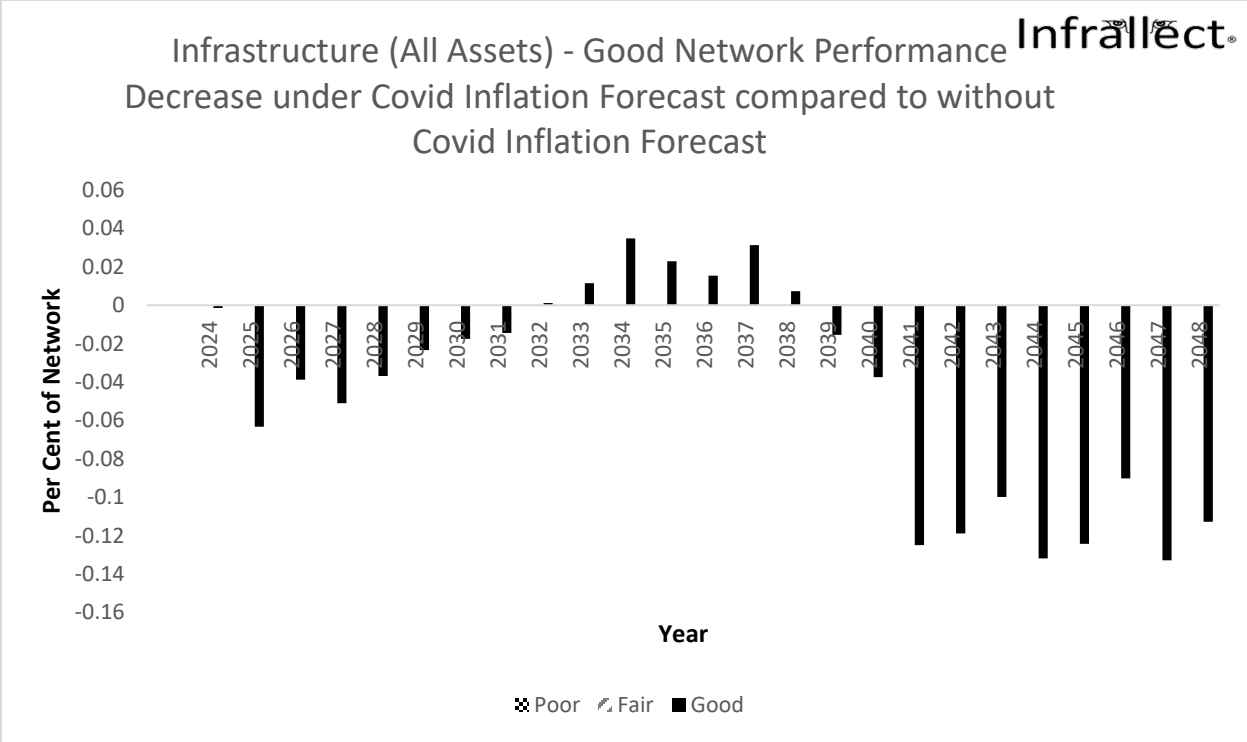


Figure 9 - Infrastructure (All Assets) - Good Network Performance Decrease under Covid Inflation Forecast compared to without Covid Inflation Forecast

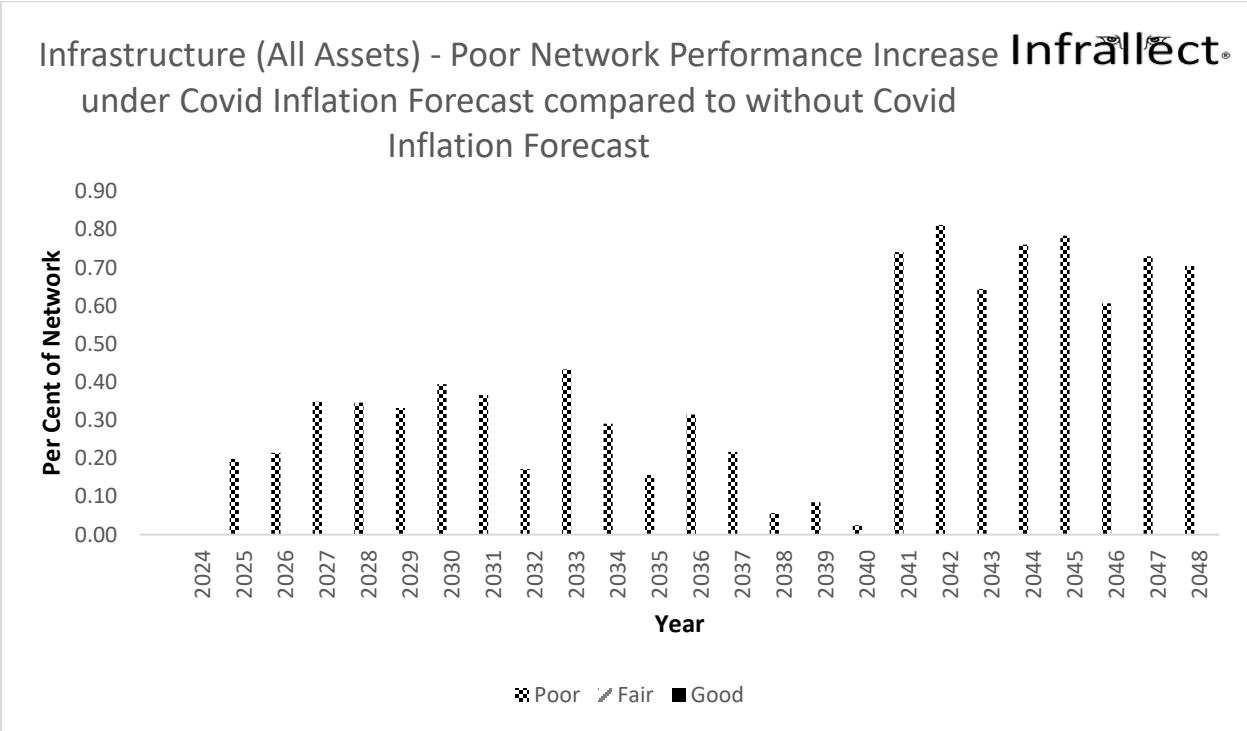


Figure 10 - Infrastructure (All Assets) - Poor Network Performance Increase under Covid Inflation Forecast compared to without Covid Inflation Forecast

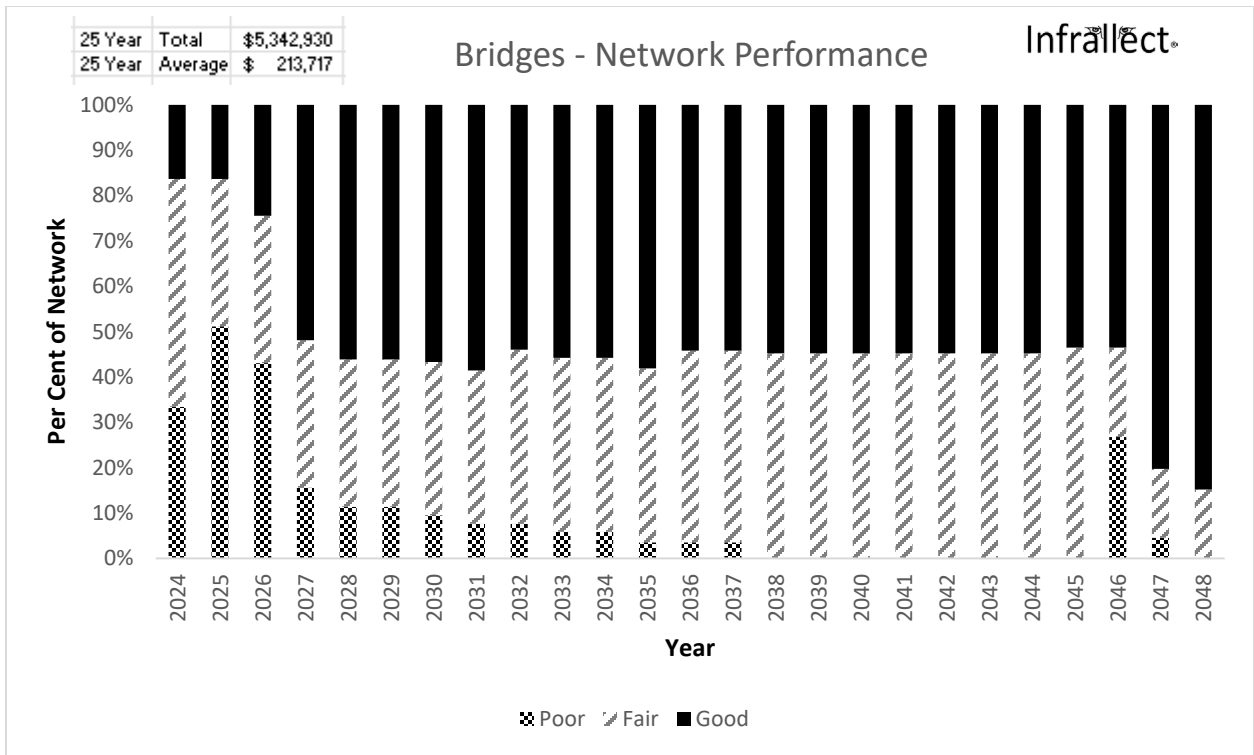


Figure 11 - Bridges - Network Performance without Covid Inflation

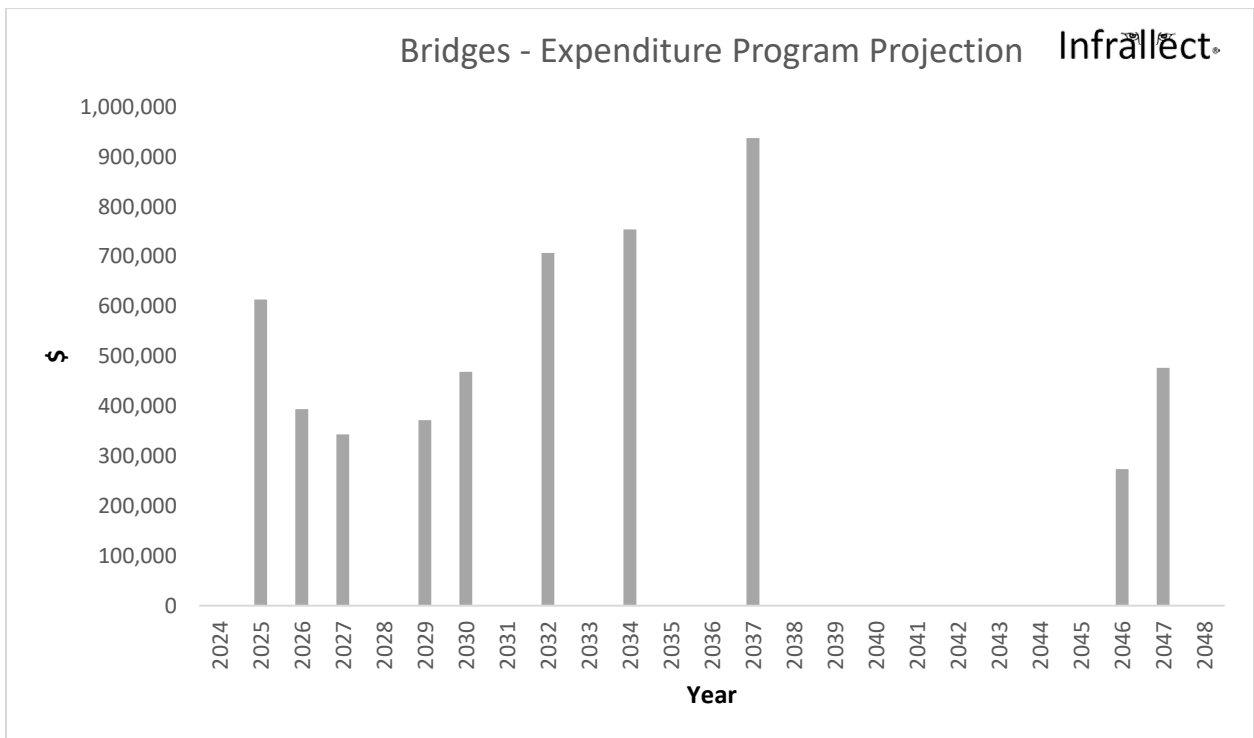


Figure 12 - Bridges - Expenditure Program Projection without Covid Inflation

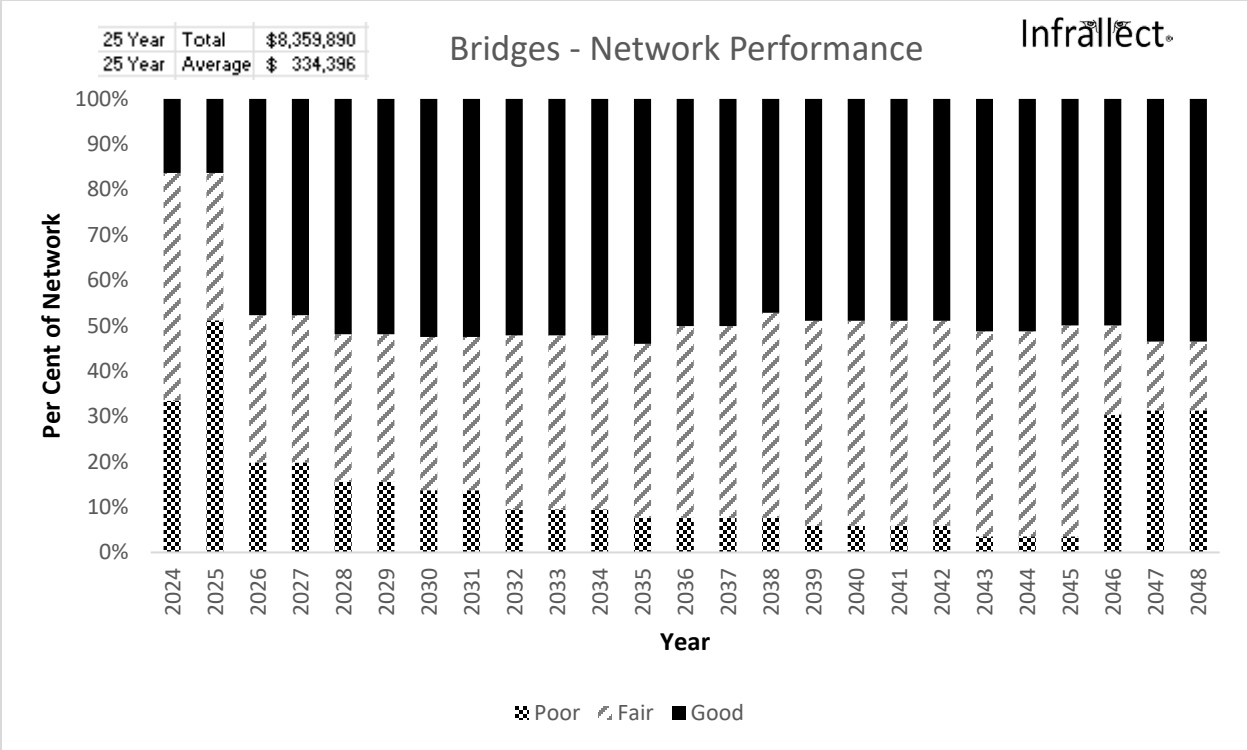


Figure 13 - Bridges - Network Performance with Covid Inflation

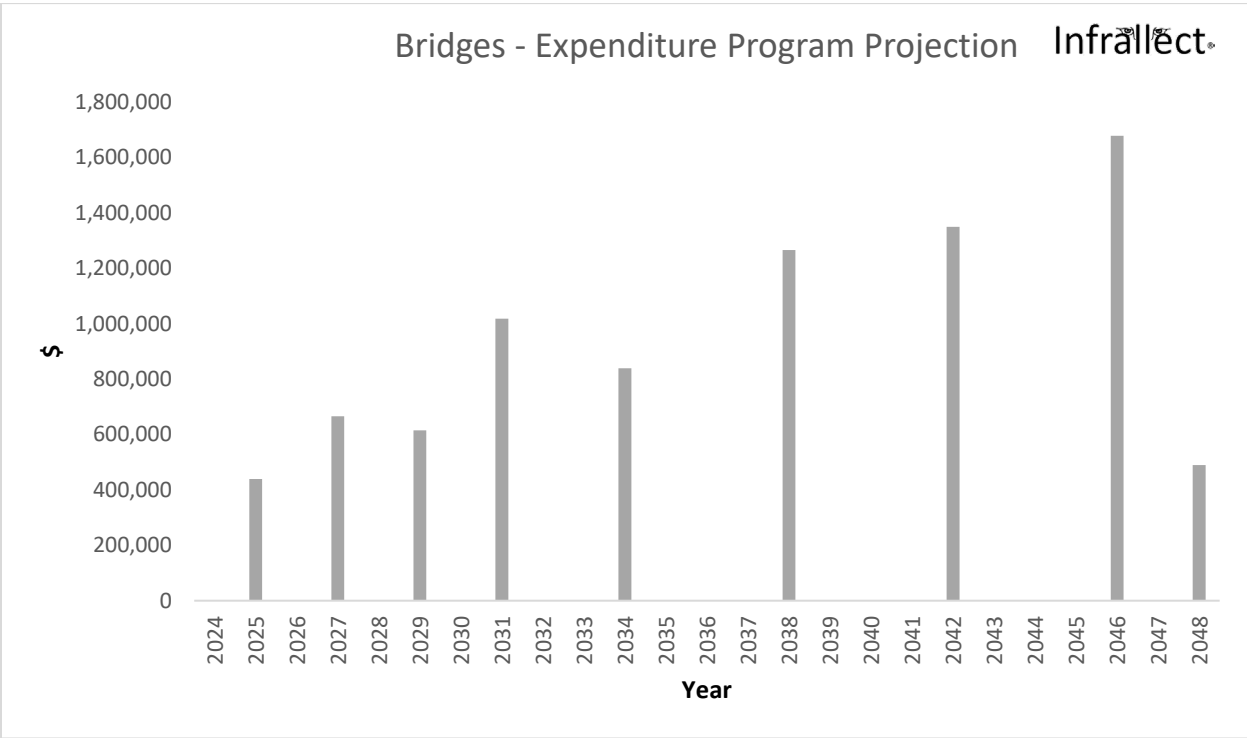


Figure 14 - Bridges - Expenditure Program Projection with Covid Inflation

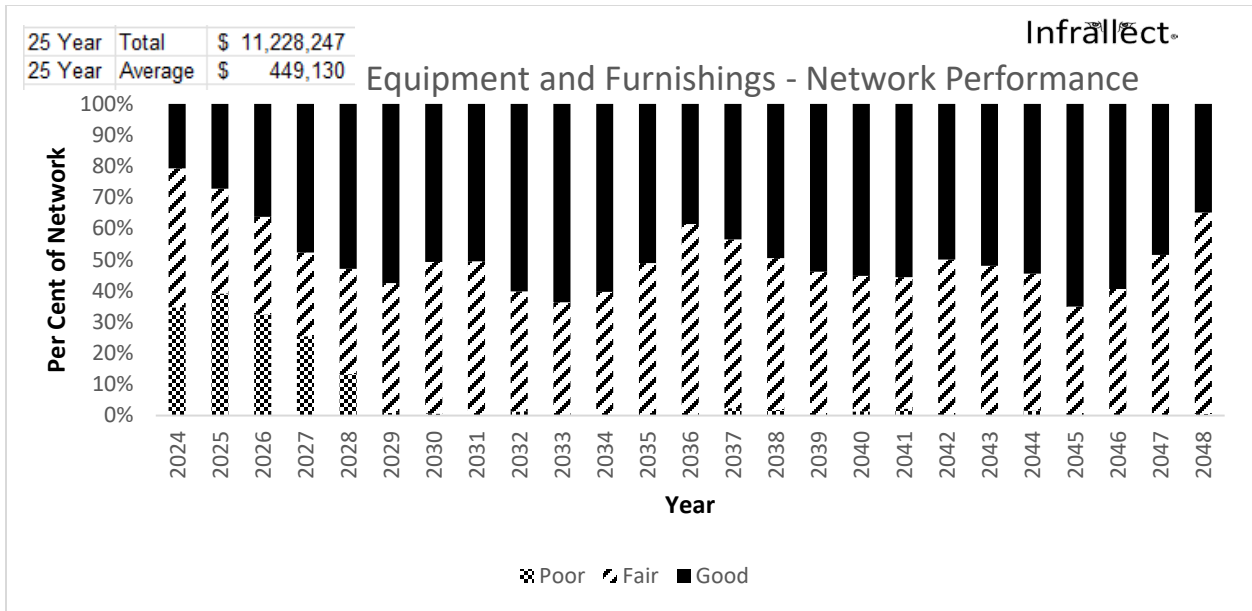


Figure 15 - Equipment and Furnishings - Network Performance without Covid Inflation

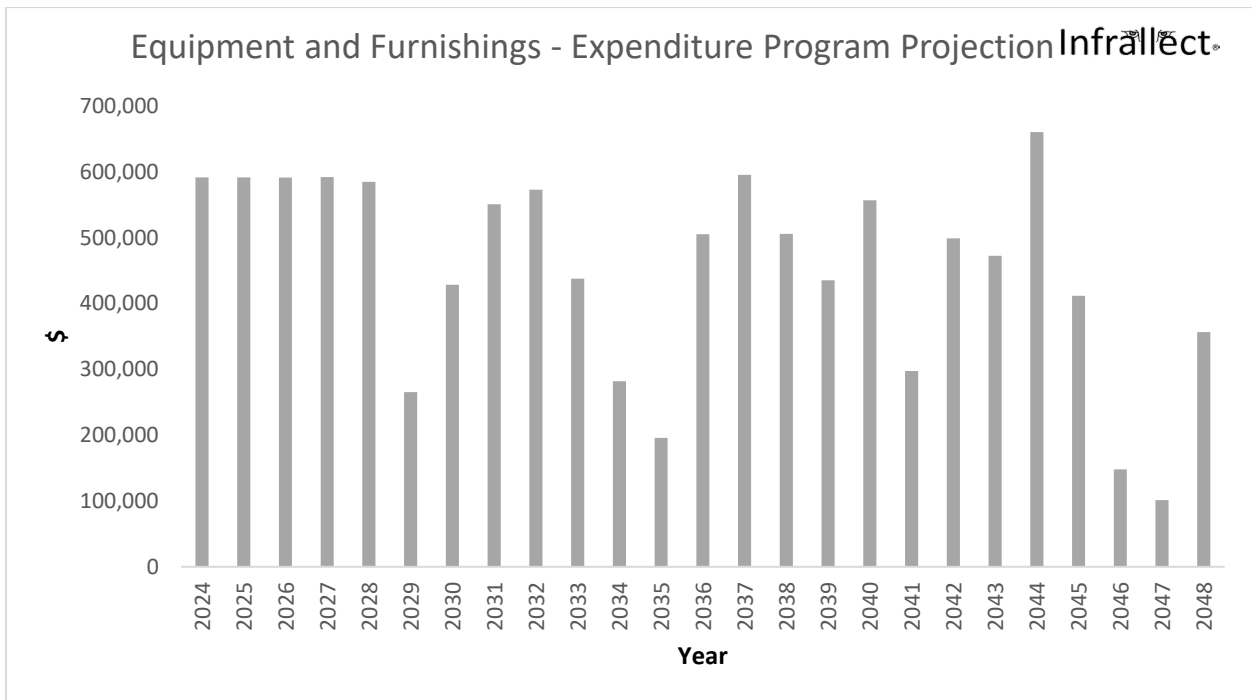


Figure 16 - Equipment and Furnishings - Expenditure Program Projection without Covid Inflation

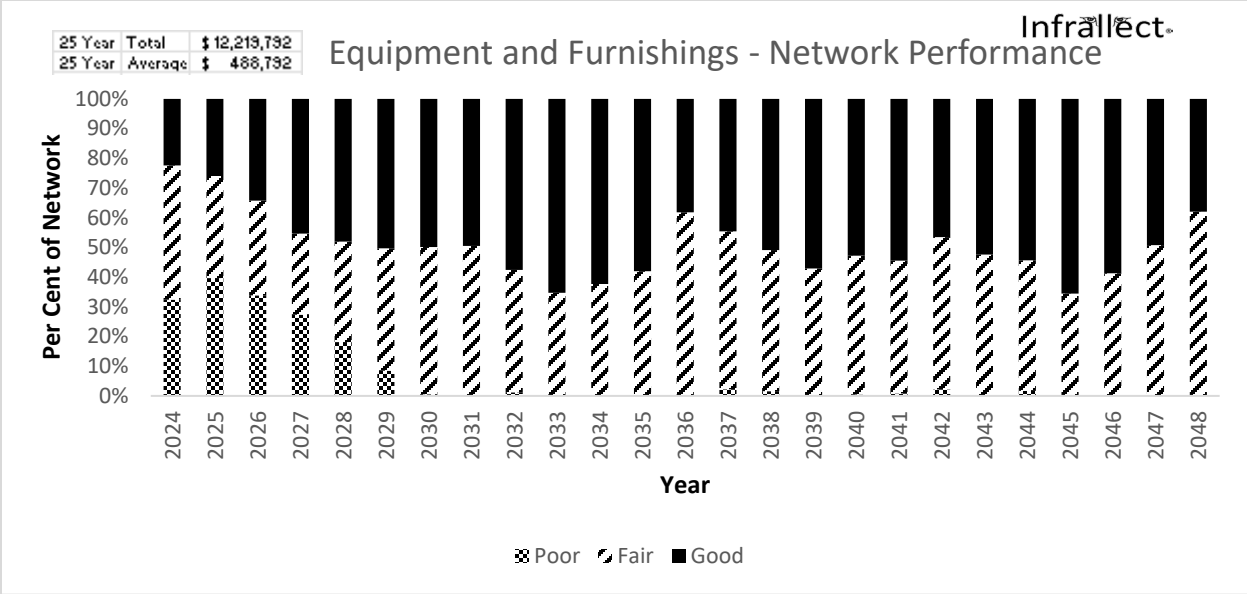


Figure 17 - Equipment and Furnishings - Network Performance with Covid Inflation

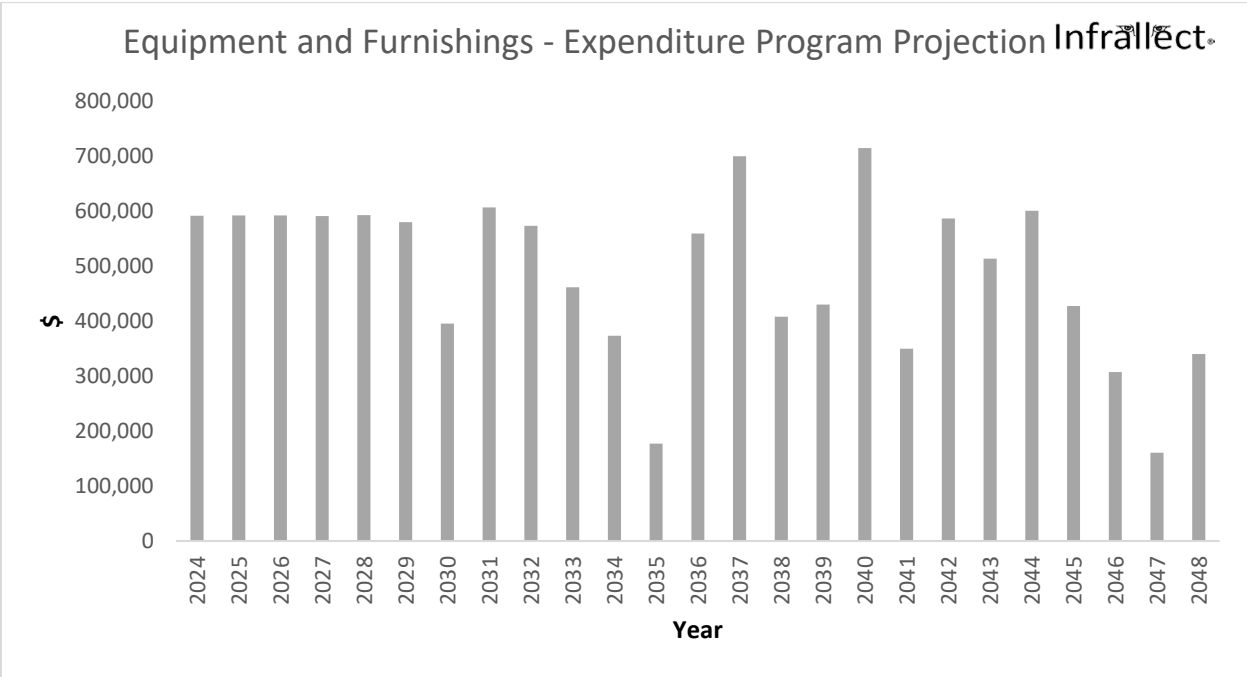


Figure 18 - Equipment and Furnishings - Expenditure Program Projection with Covid Inflation

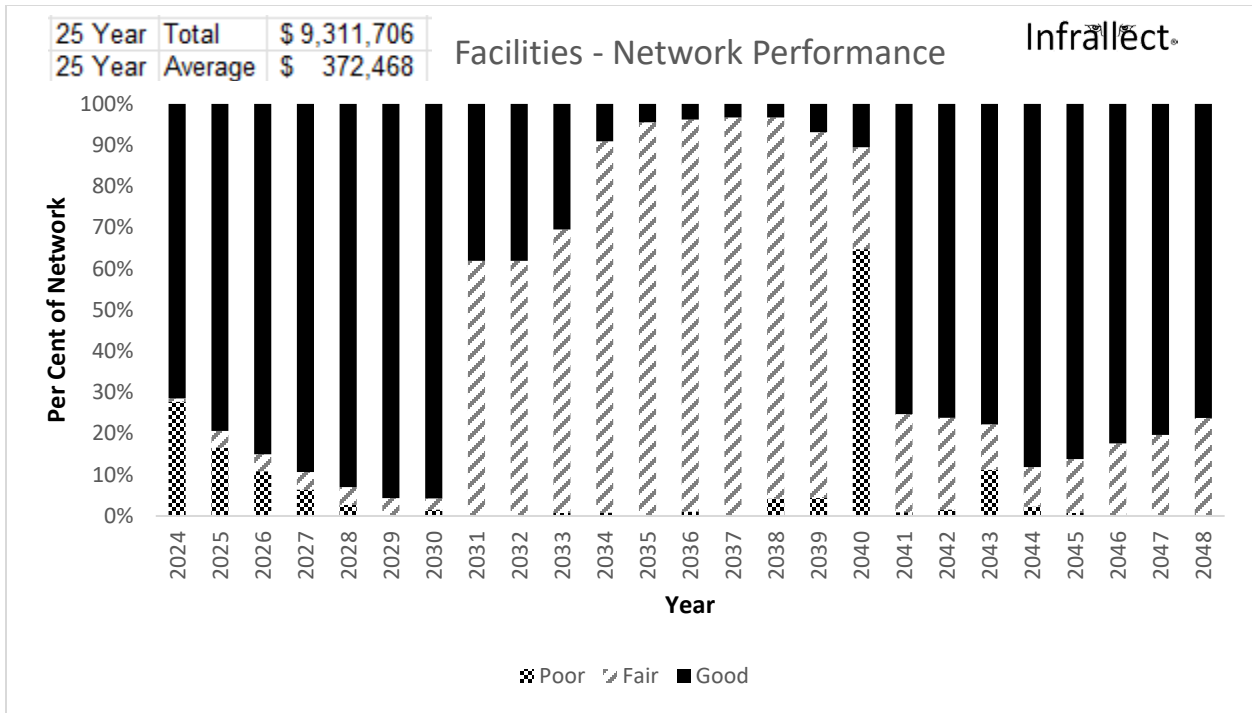


Figure 19 - Facilities - Network Performance without Covid Inflation

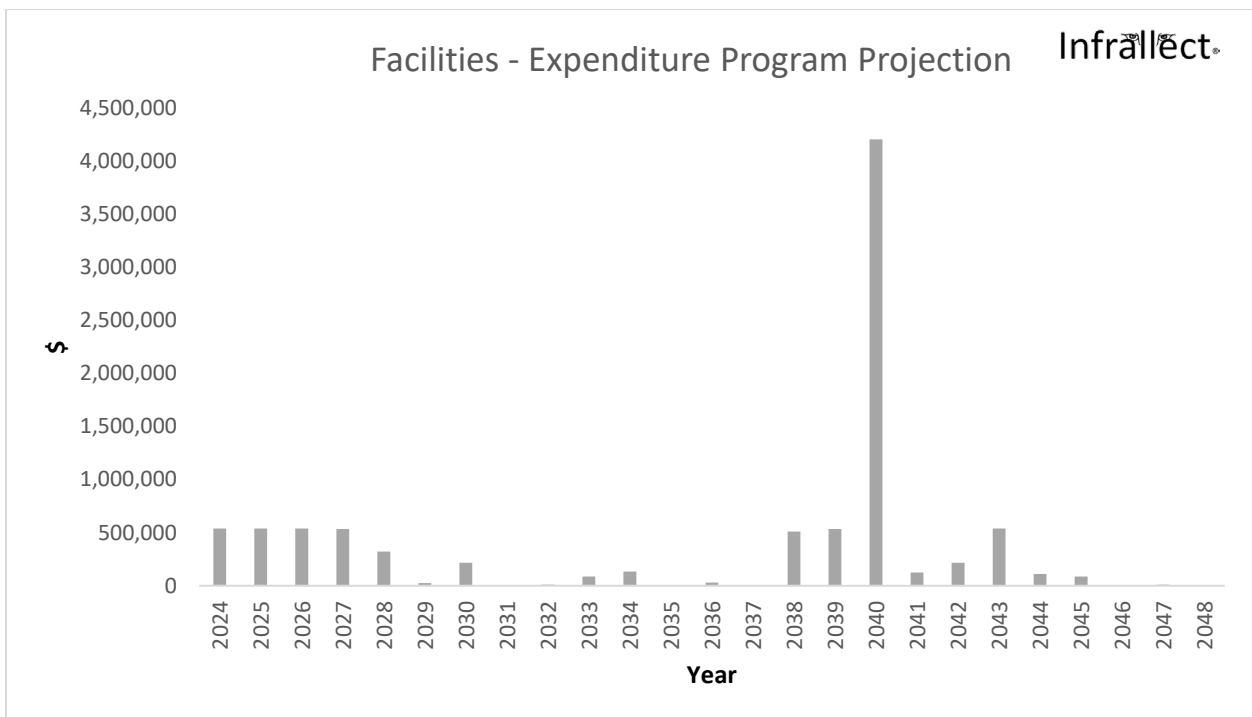


Figure 20 - Facilities - Expenditure Program Projection without Covid Inflation

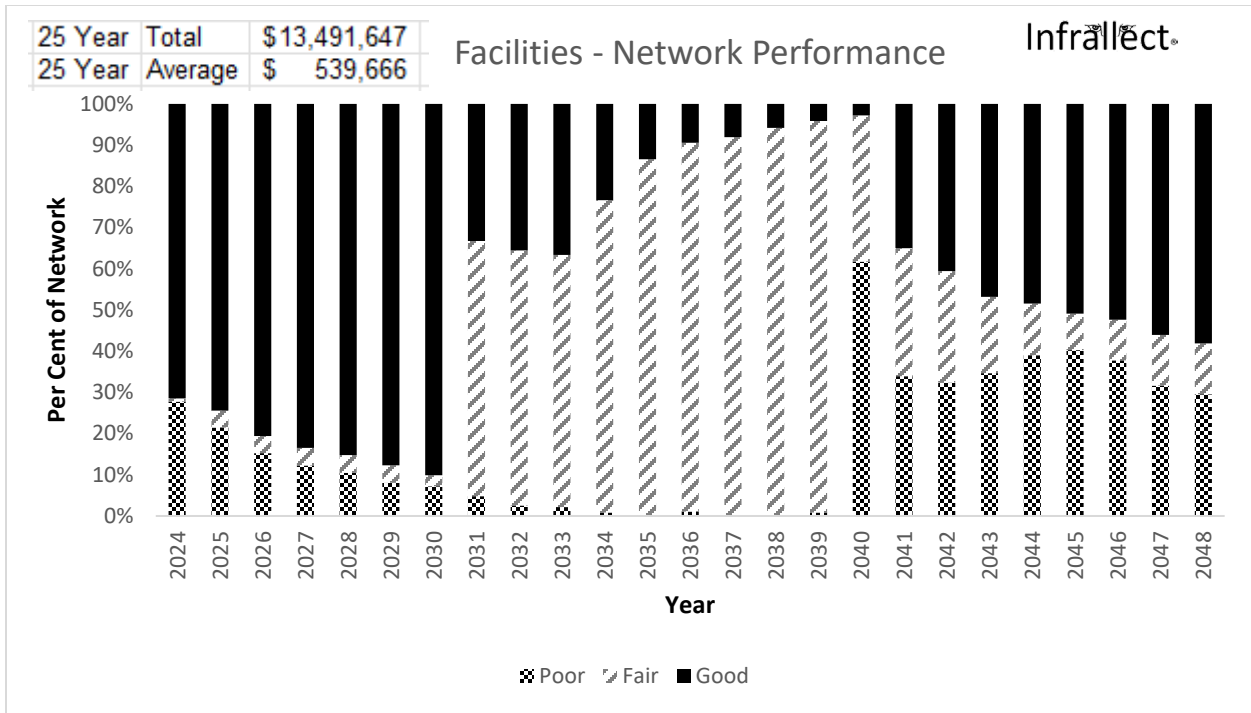


Figure 21 - Facilities - Network Performance with Covid Inflation

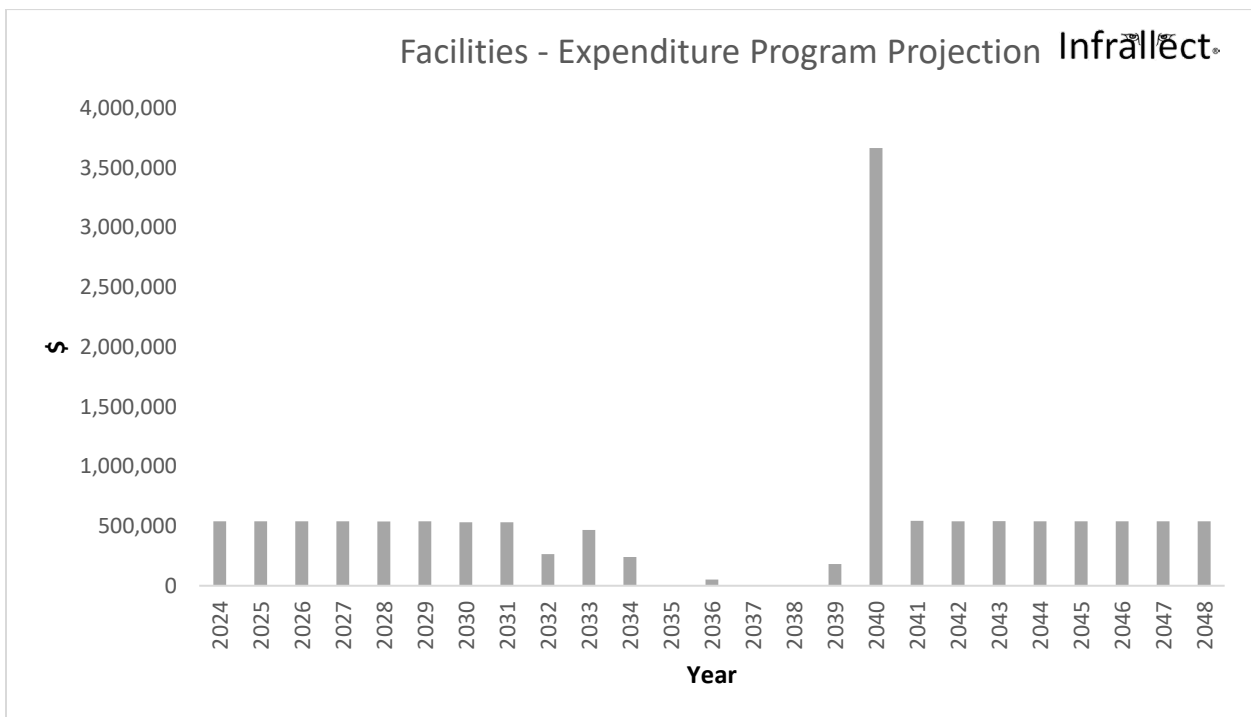


Figure 22 - Facilities - Expenditure Program Projection with Covid Inflation

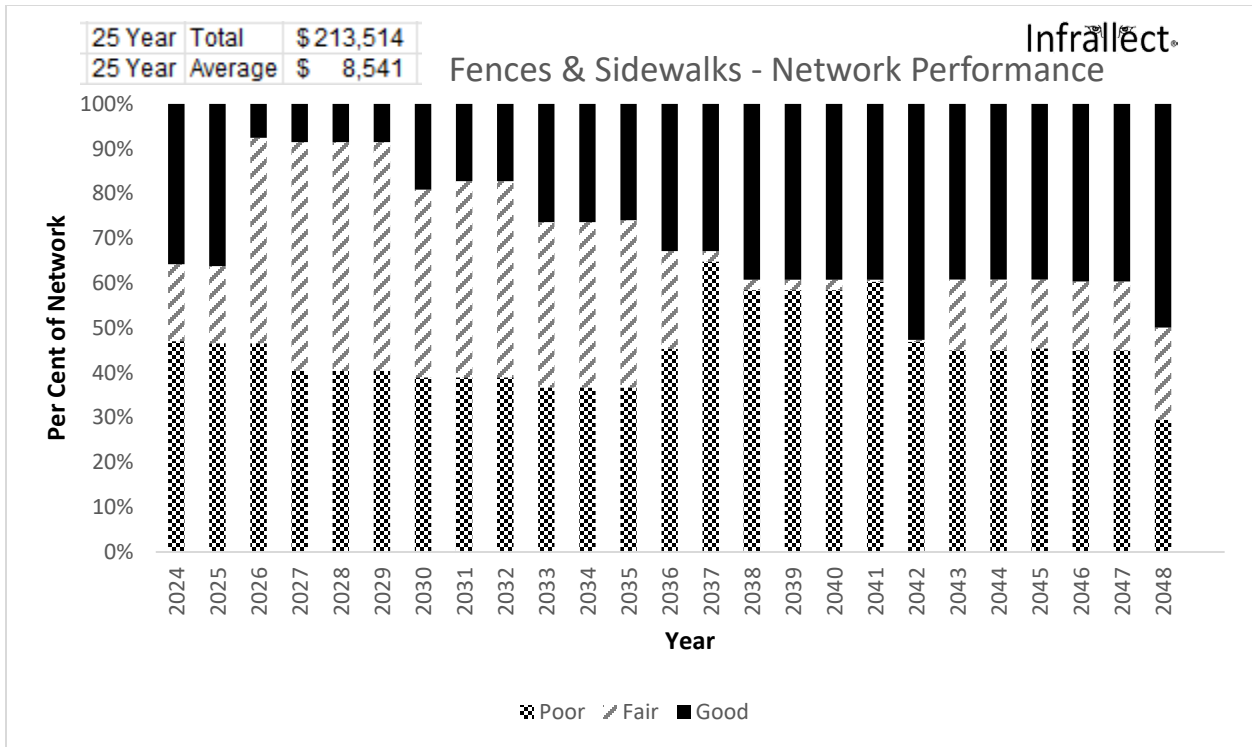


Figure 23 - Fences & Sidewalks - Network Performance without Covid Inflation

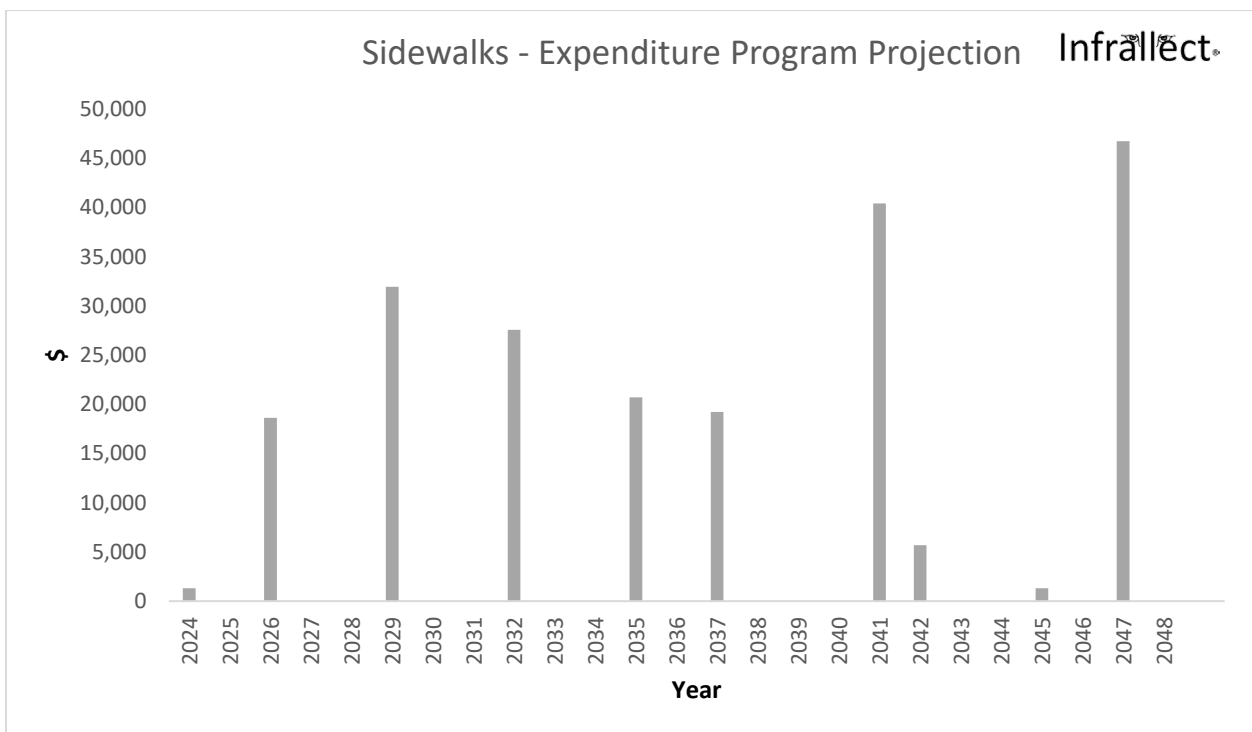


Figure 24 Sidewalks - Expenditure Program Projection without Covid Inflation

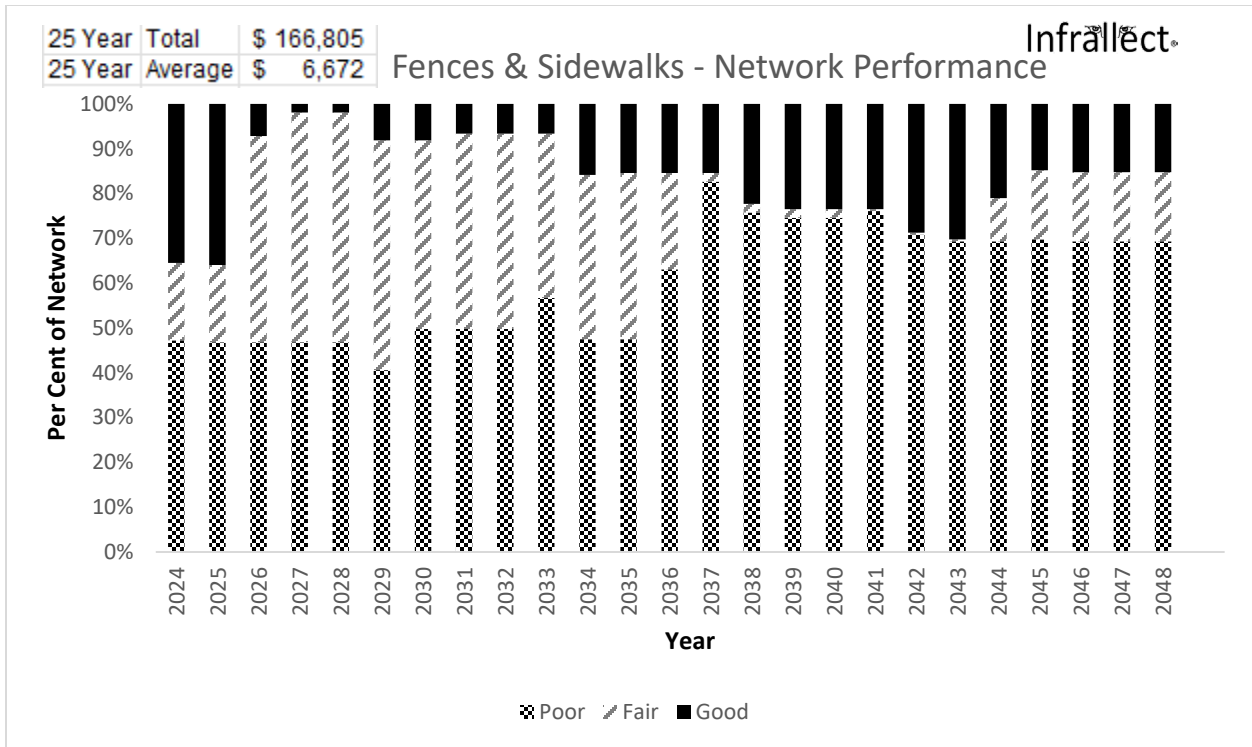


Figure 25 - Fences & Sidewalks - Network Performance with Covid Inflation

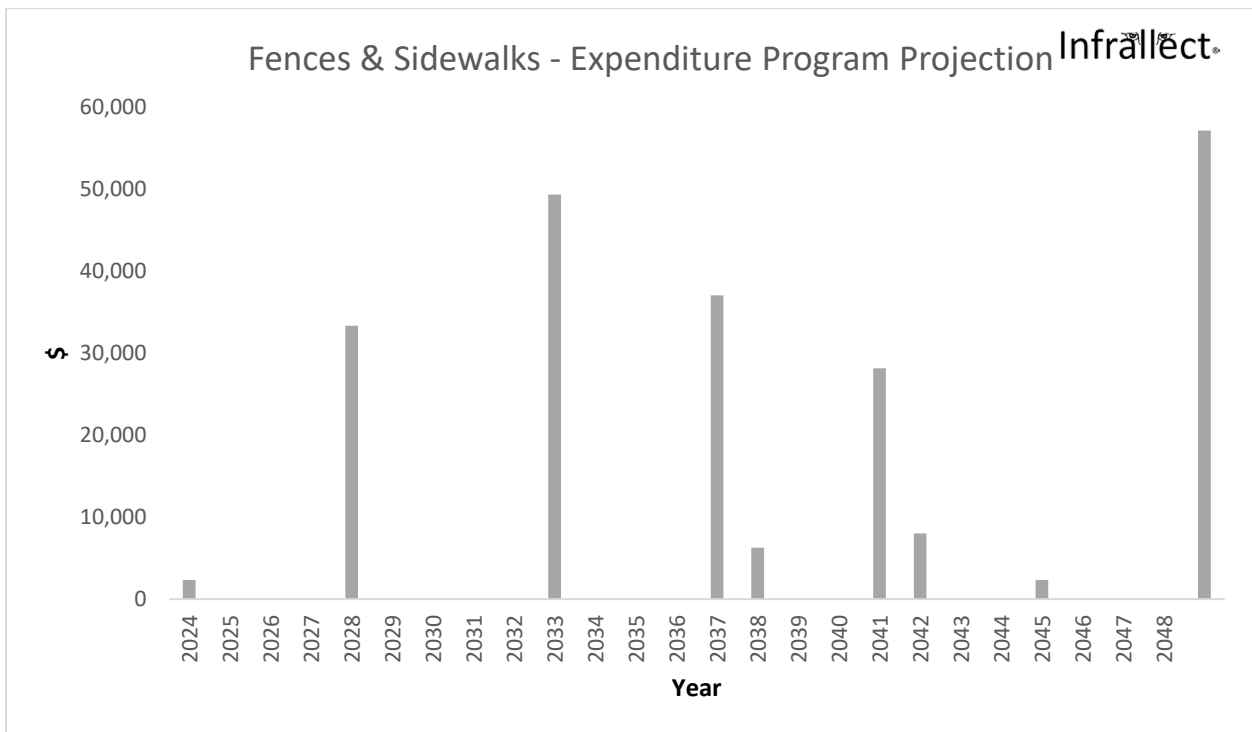


Figure 26 - Fences & Sidewalks - Expenditure Program Projection with Covid Inflation

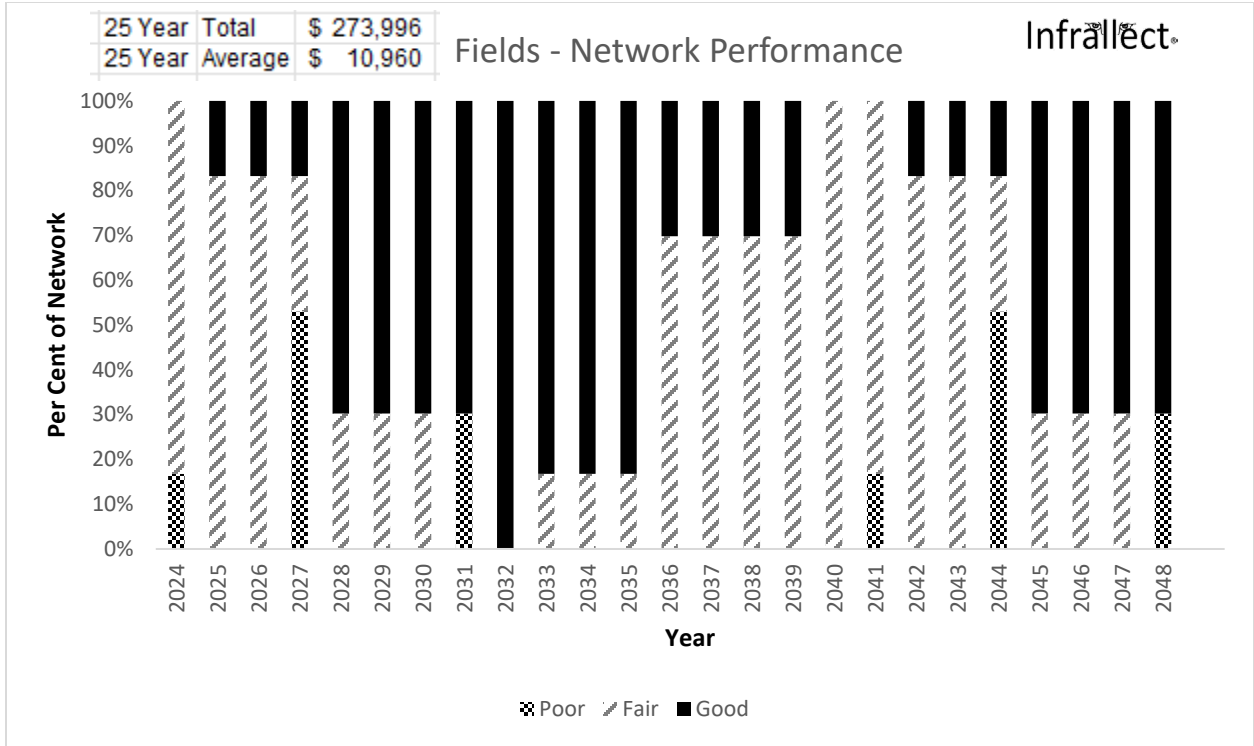


Figure 27 - Fields - Network Performance without Covid Inflation

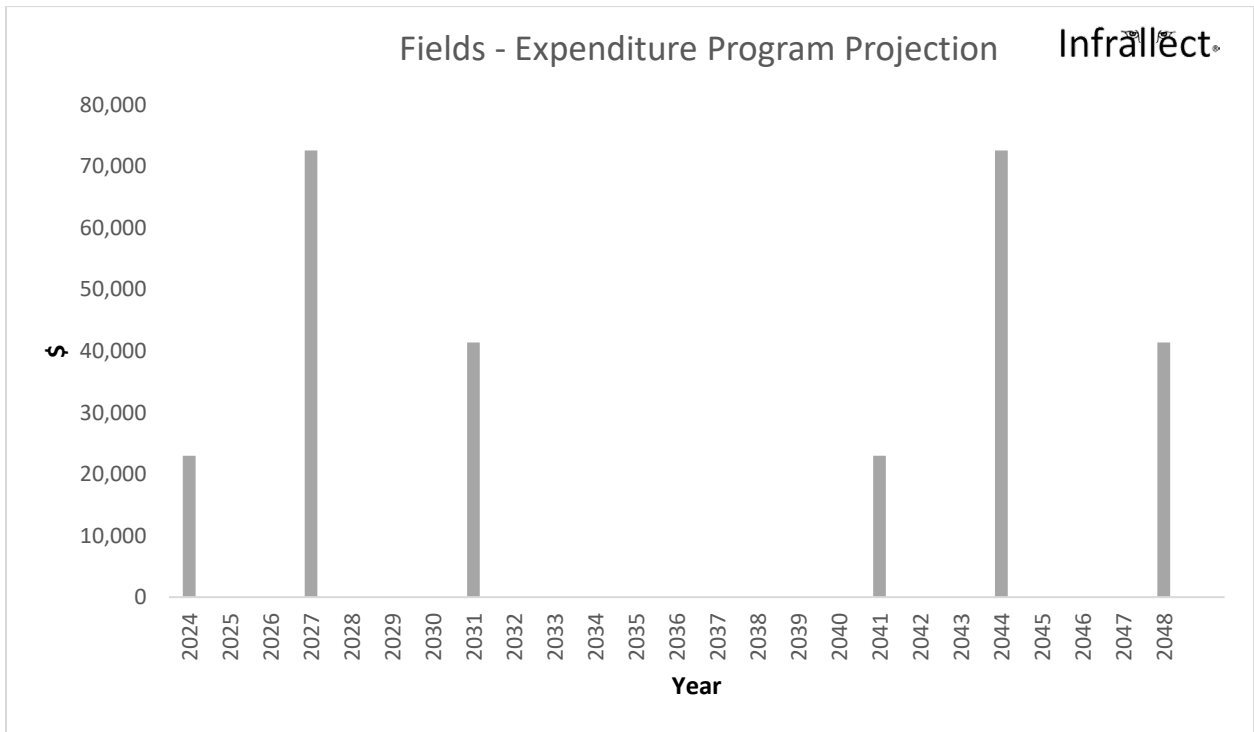


Figure 28 - Fields - Expenditure Program Projection without Covid Inflation

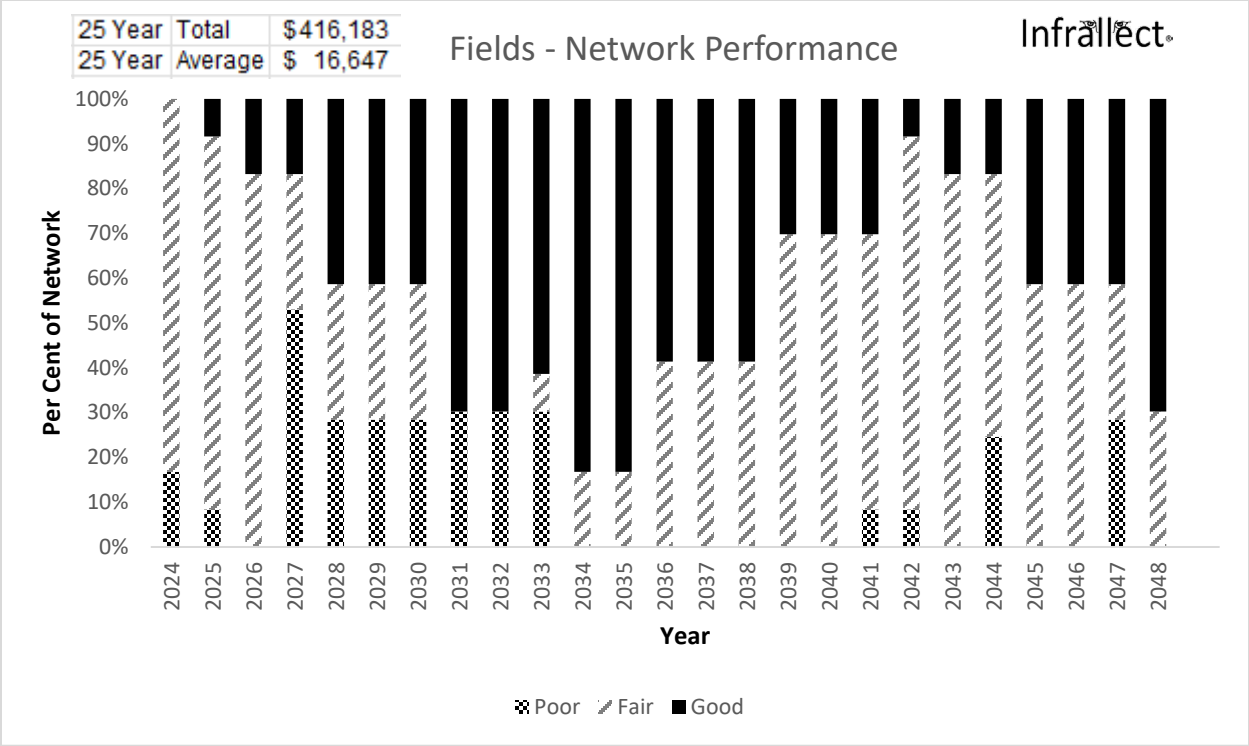


Figure 29 - Fields - Network Performance with Covid Inflation

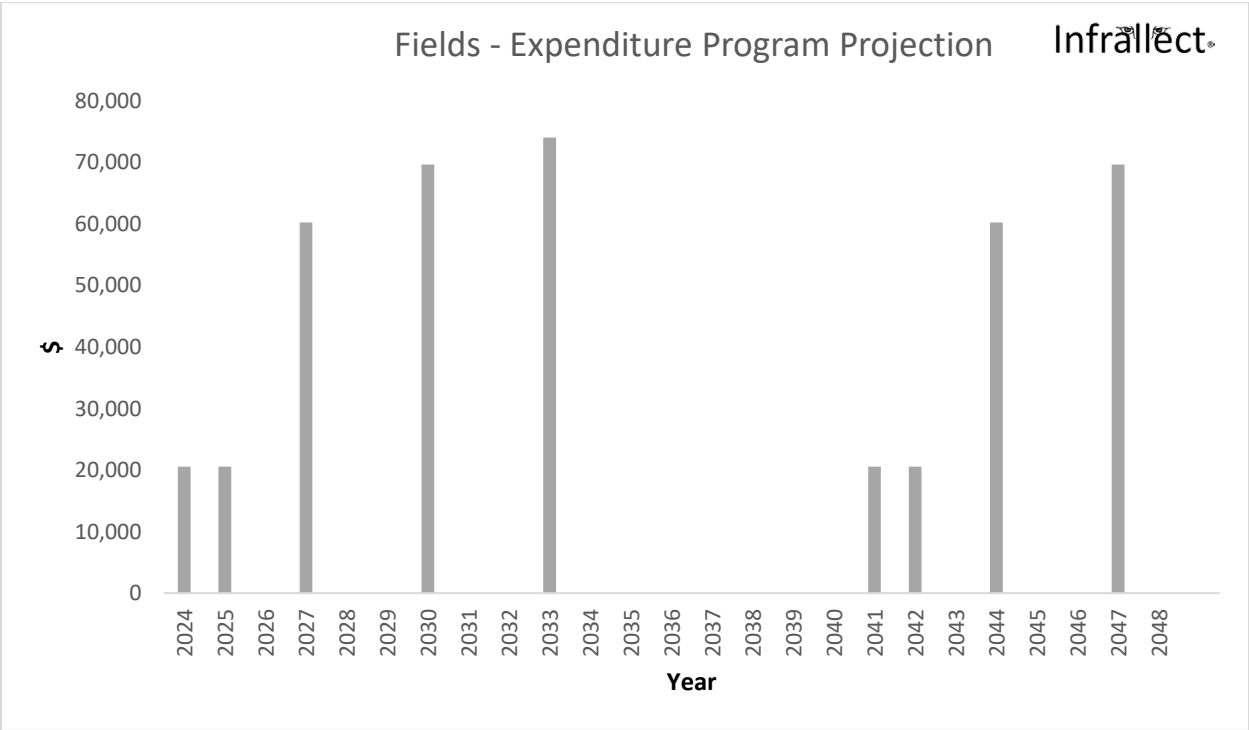


Figure 30 - Fields - Expenditure Program Projection with Covid Inflation

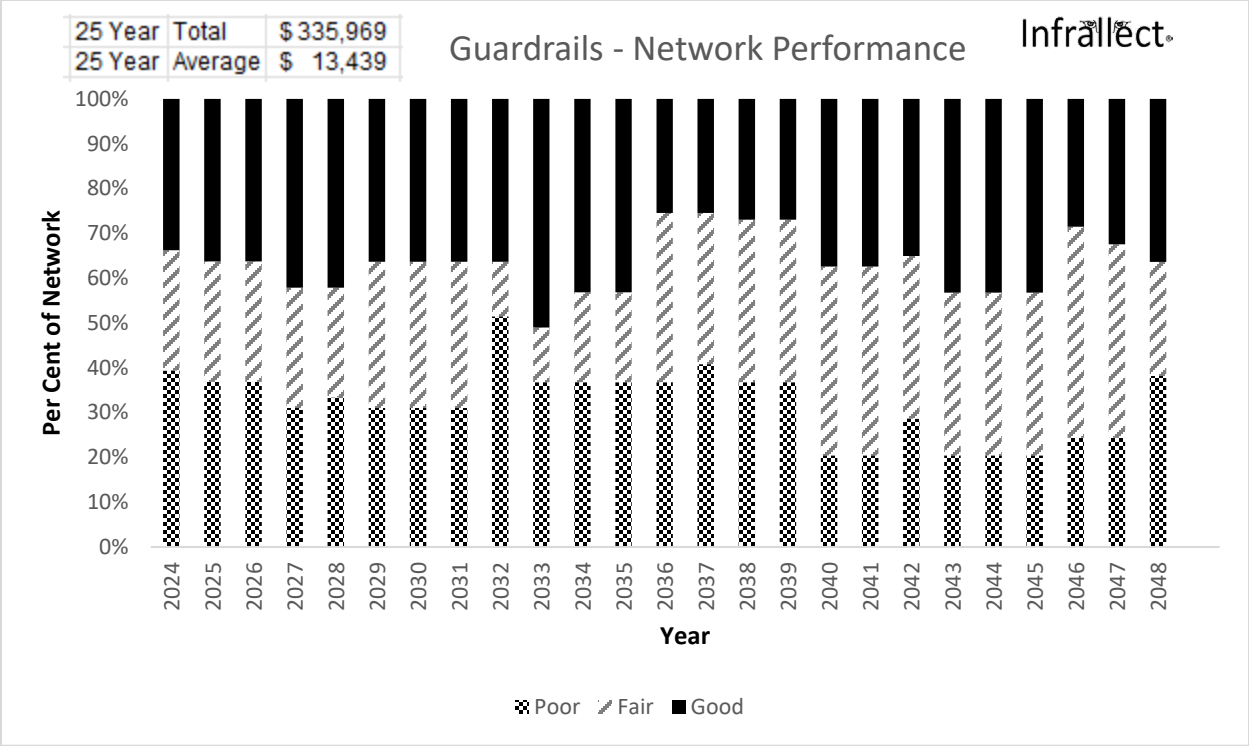


Figure 31 - Guardrails - Network Performance without Covid Inflation

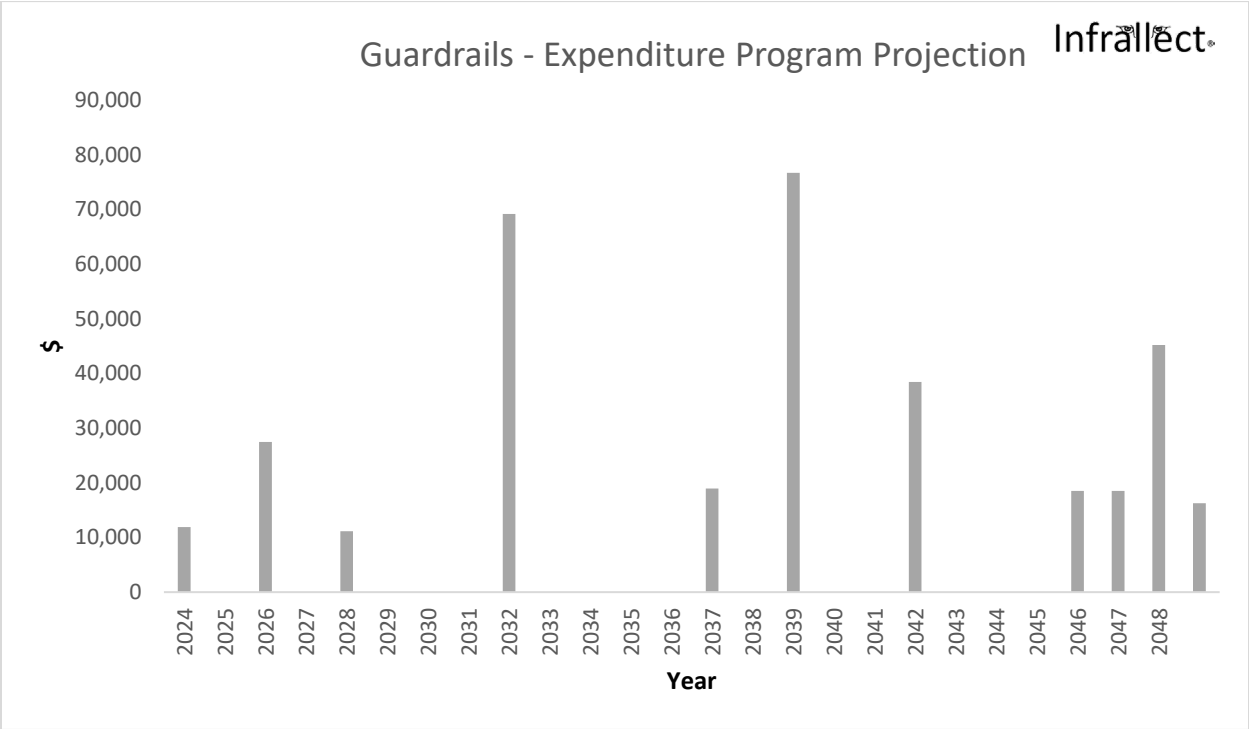


Figure 32 - Guardrails - Expenditure Program Projection without Covid Inflation

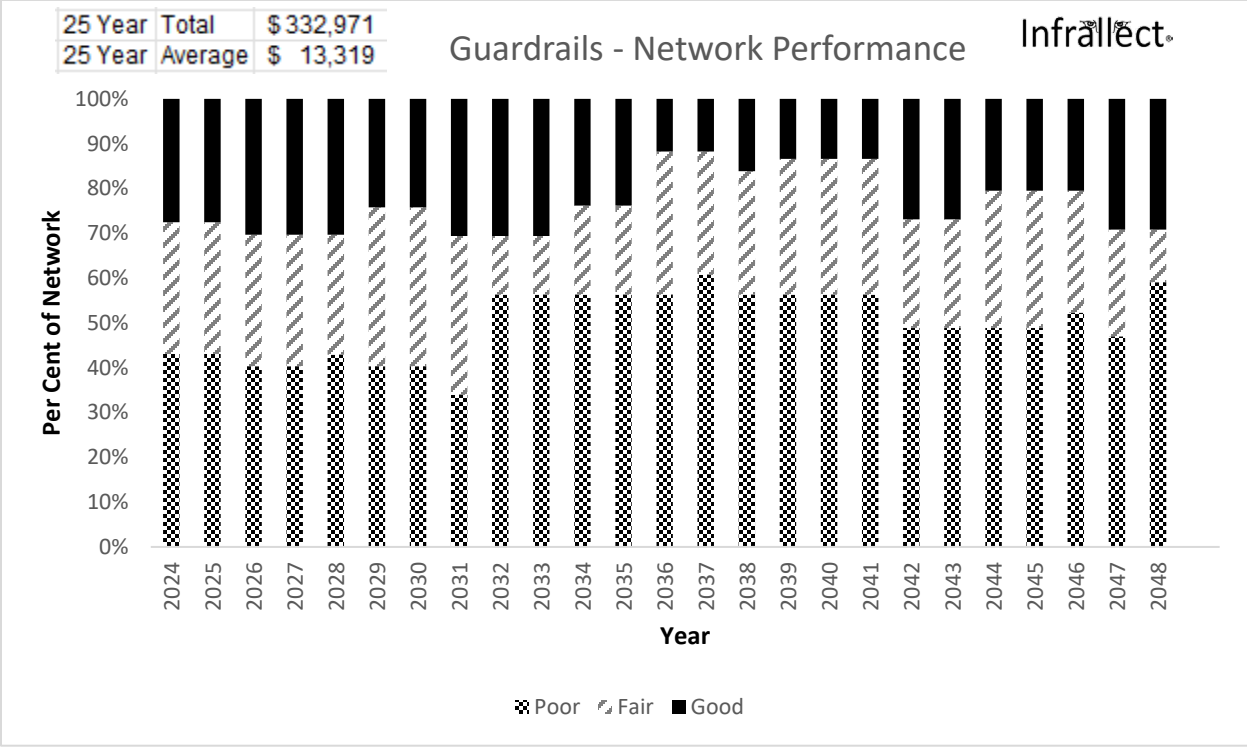


Figure 33 - Guardrails - Network Performance with Covid Inflation

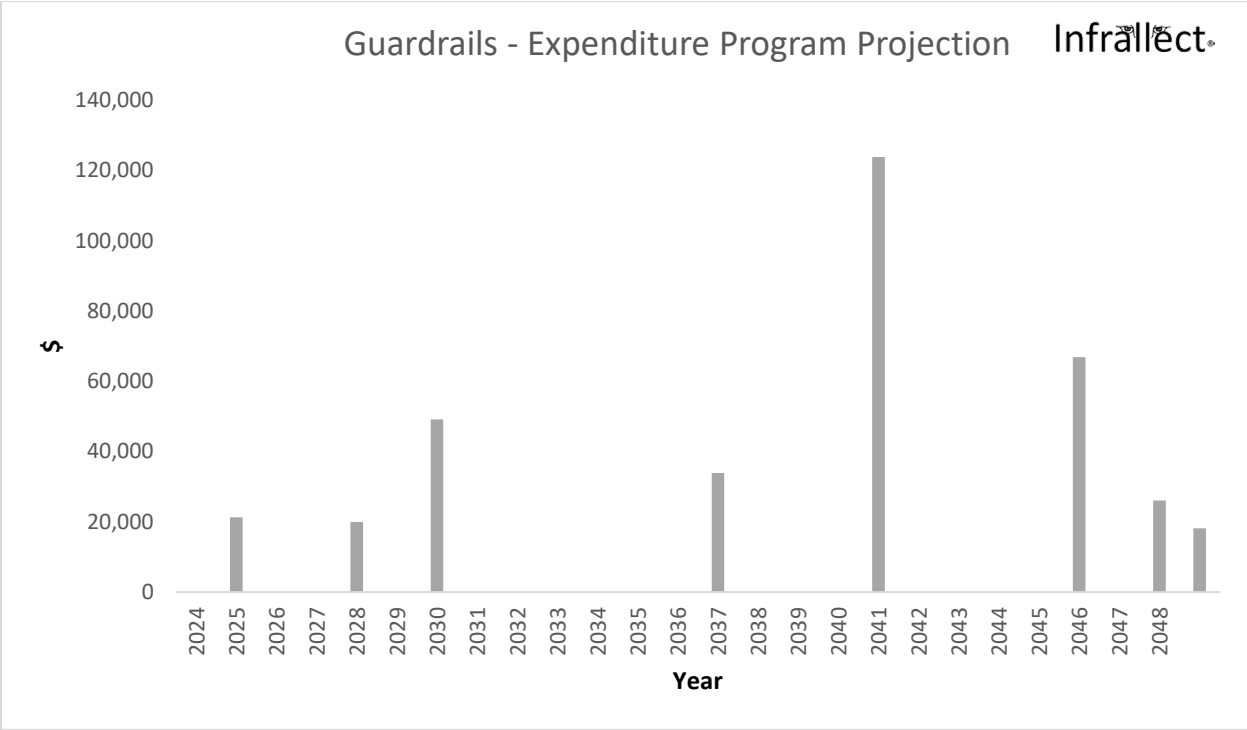


Figure 34 - Guardrails - Expenditure Program Projection with Covid Inflation

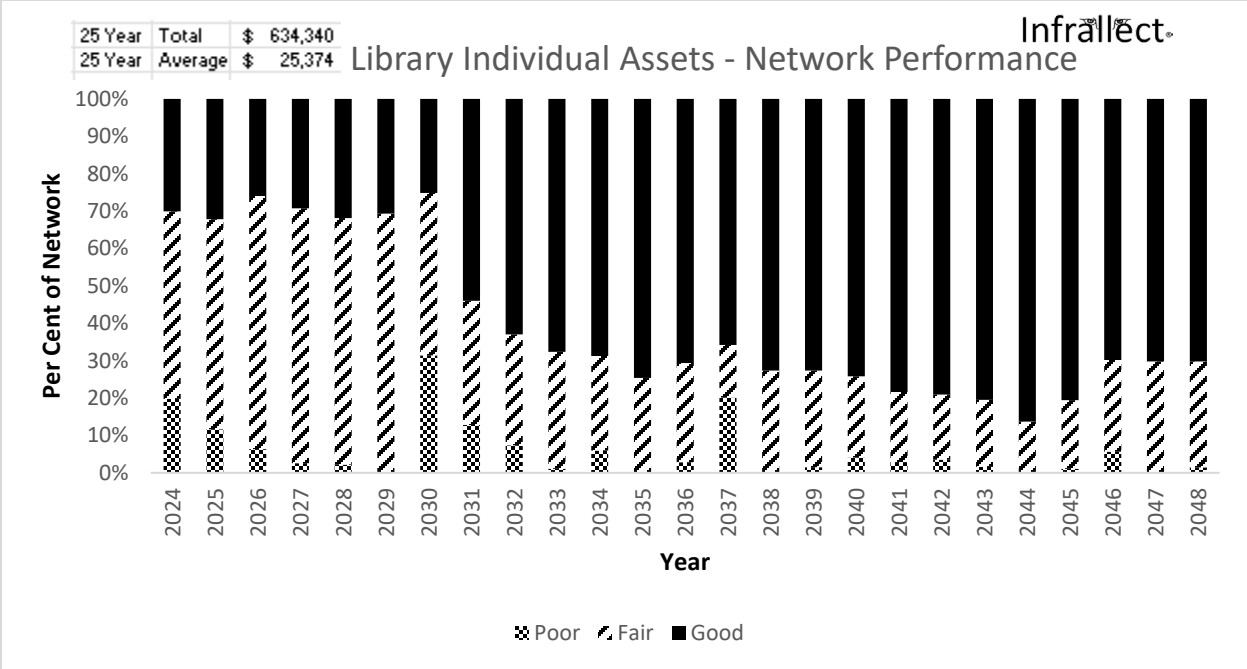


Figure 35 - Library Individual Assets - Network Performance without Covid Inflation

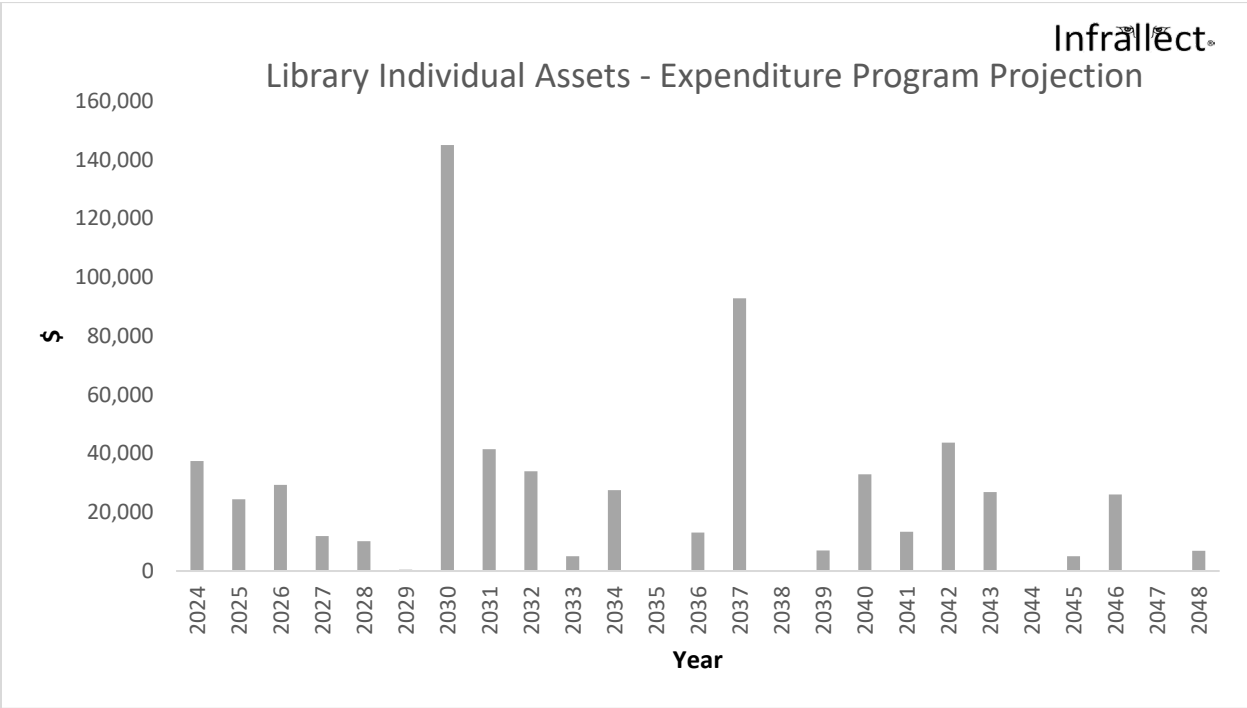


Figure 36 - Library Individual Assets - Expenditure Program Projection without Covid Inflation

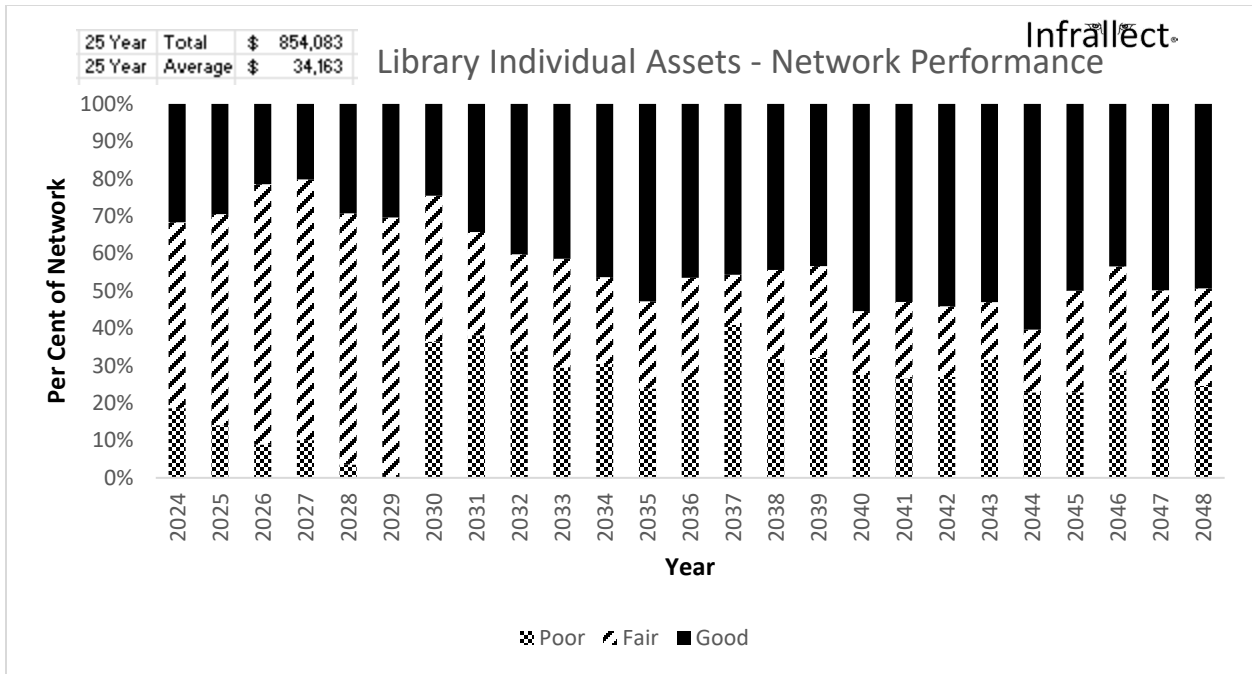


Figure 37 - Library Individual Assets - Expenditure Program Projection with Covid Inflation

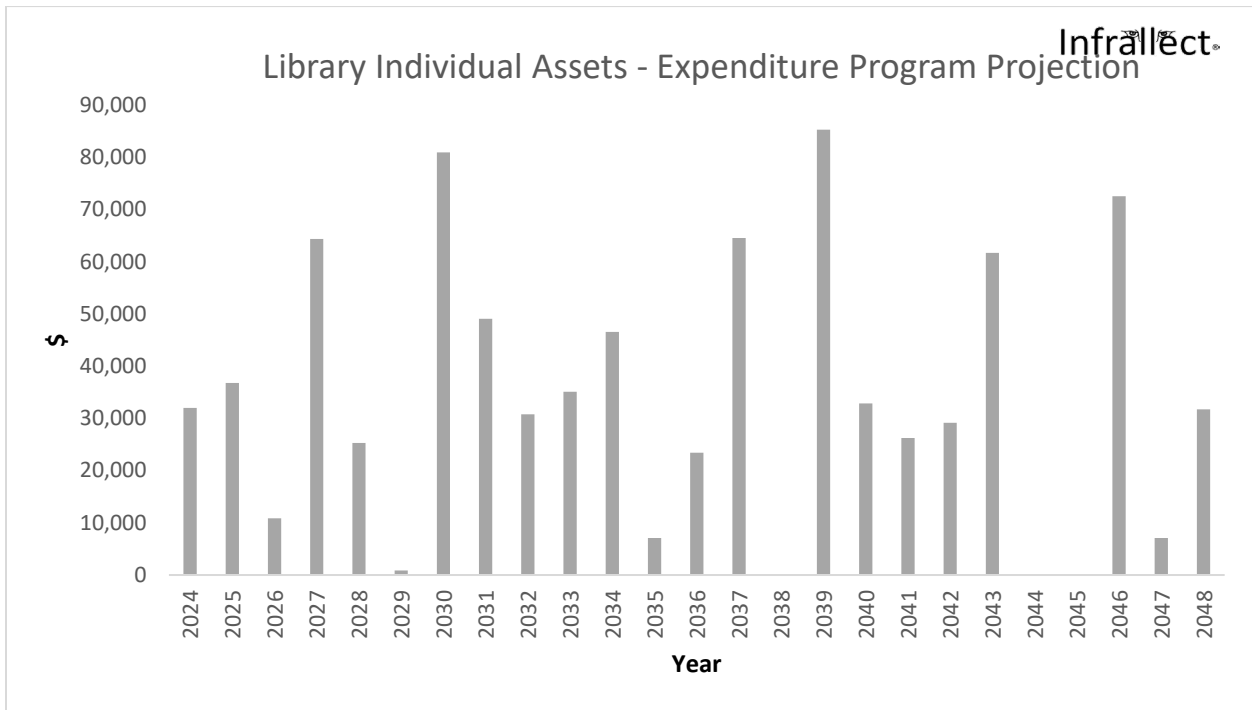


Figure 38 - Library Individual Assets - Expenditure Program Projection with Covid Inflation

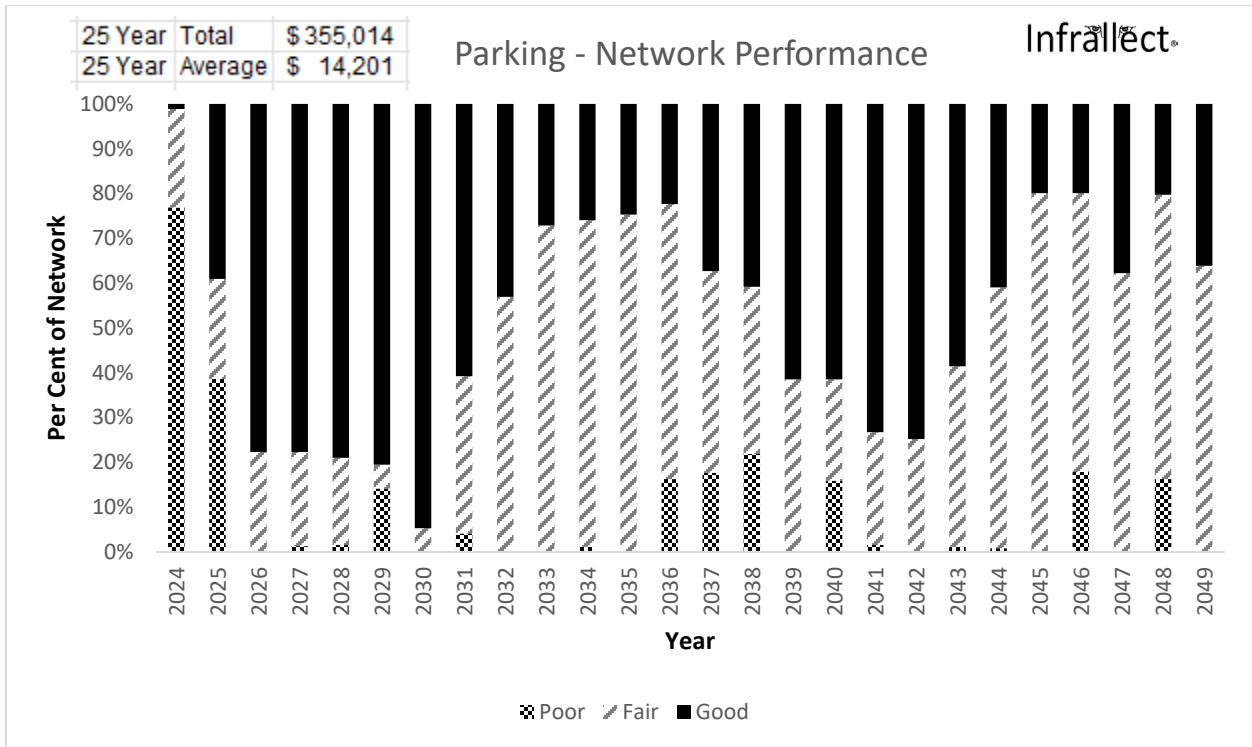


Figure 39 - Parking - Network Performance without Covid Inflation

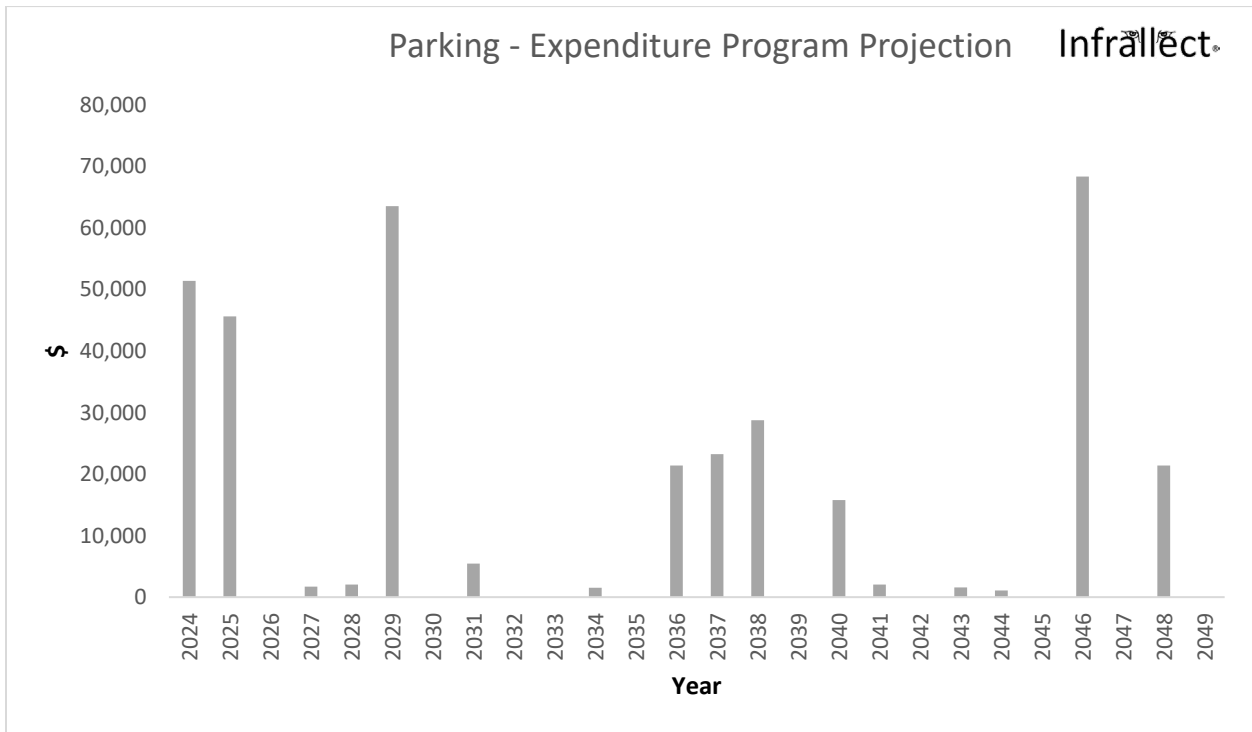


Figure 40 - Parking - Expenditure Program Projection without Covid Inflation

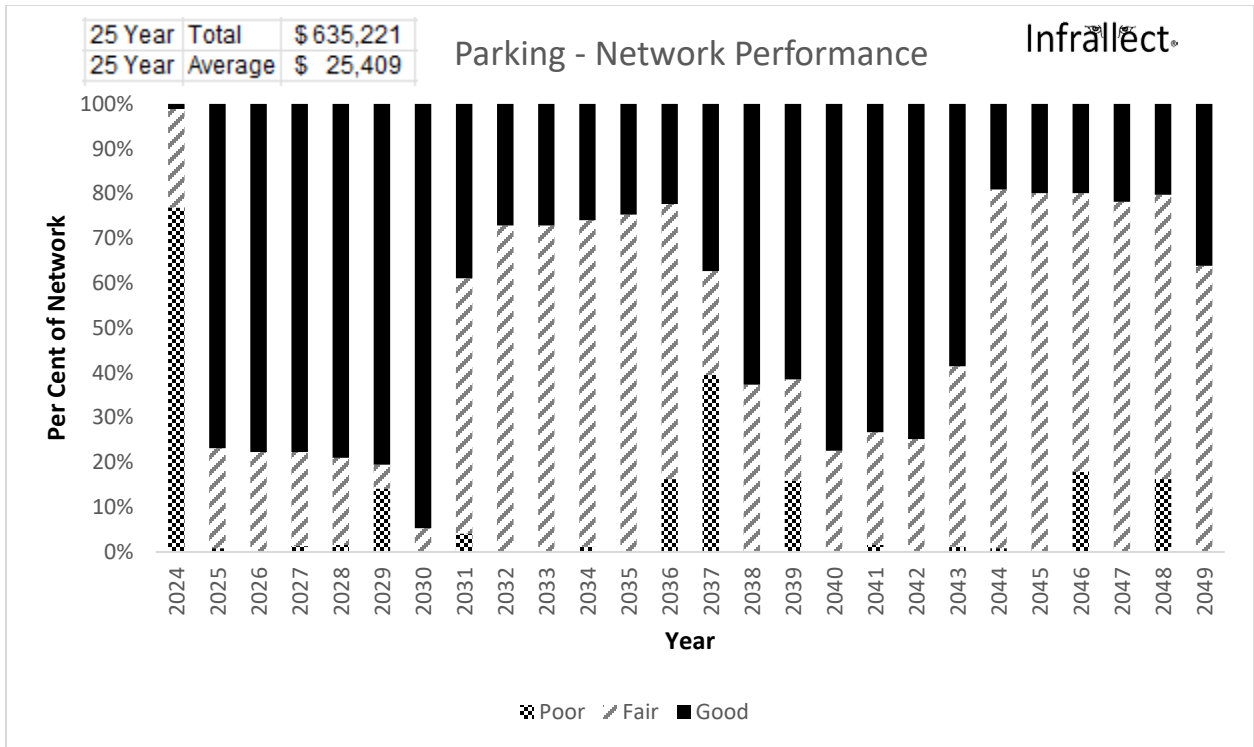


Figure 41 - Parking - Network Performance with Covid Inflation

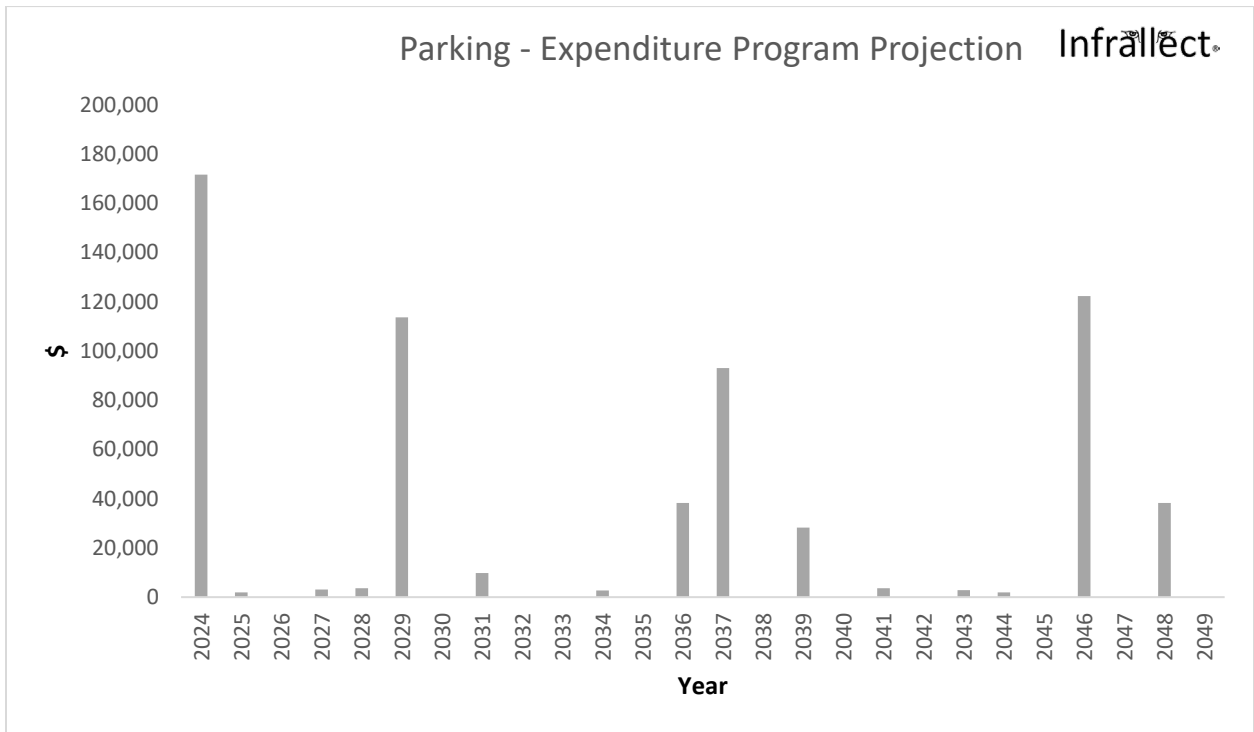


Figure 42 - Parking - Expenditure Program Projection with Covid Inflation

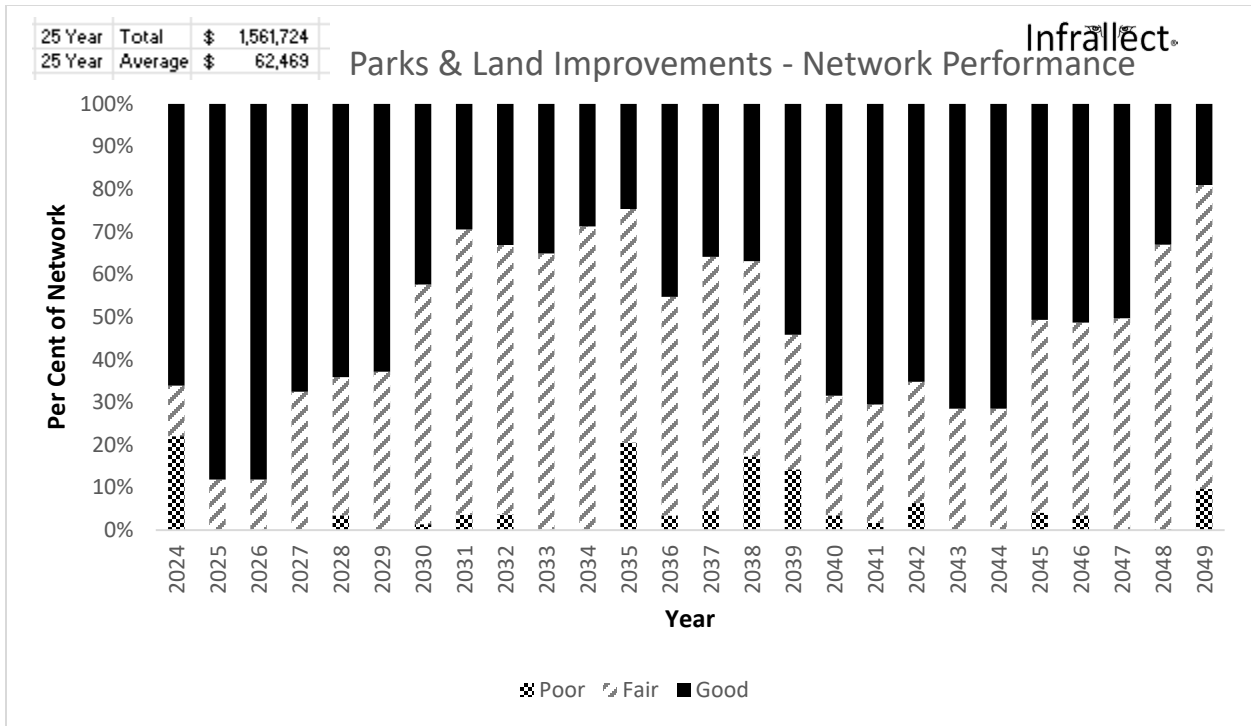


Figure 43 - Parks & Land Improvements - Network Performance without Covid Inflation

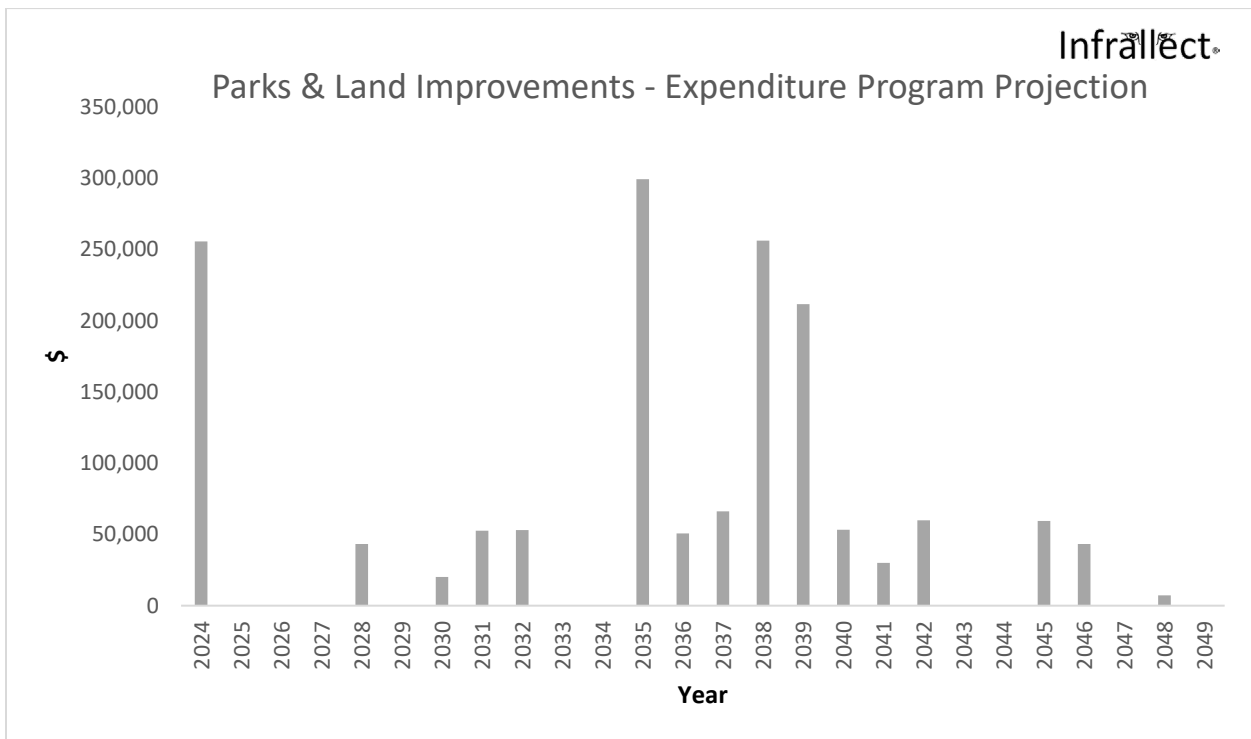


Figure 44 - Parks & Land Improvements - Expenditure Program Projection without Covid Inflation

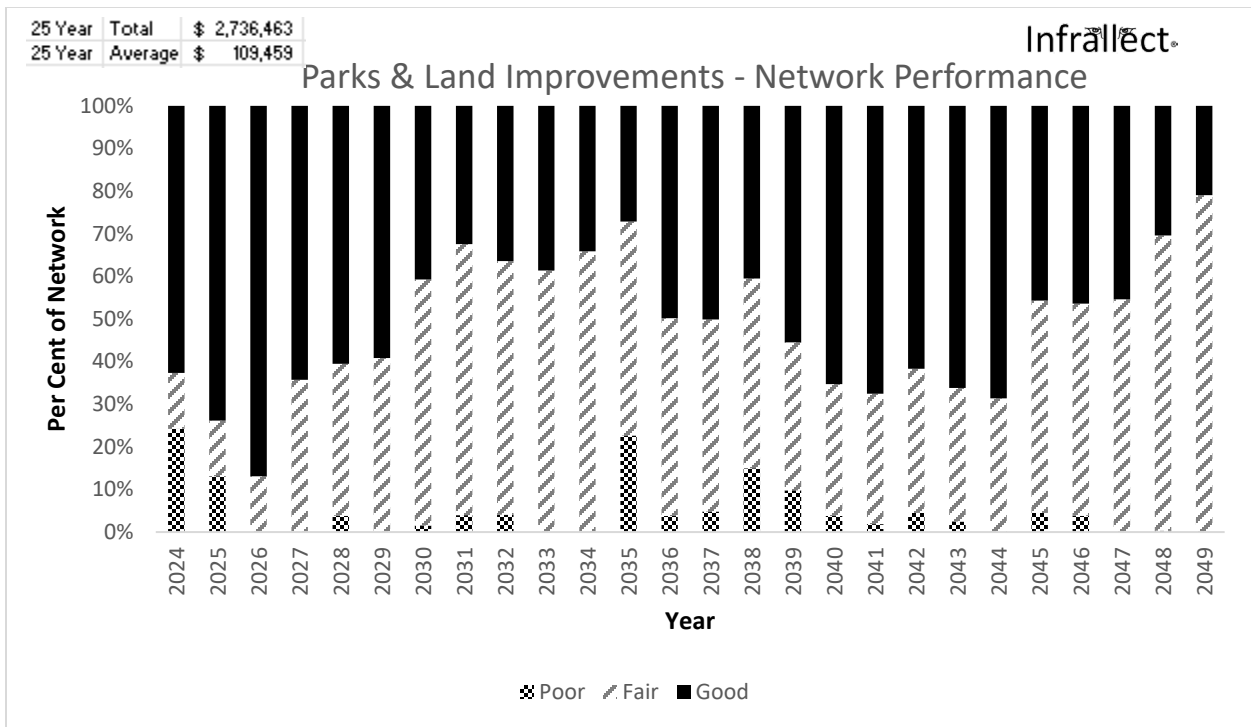


Figure 45 - Parks & Land Improvements - Network Performance with Covid Inflation

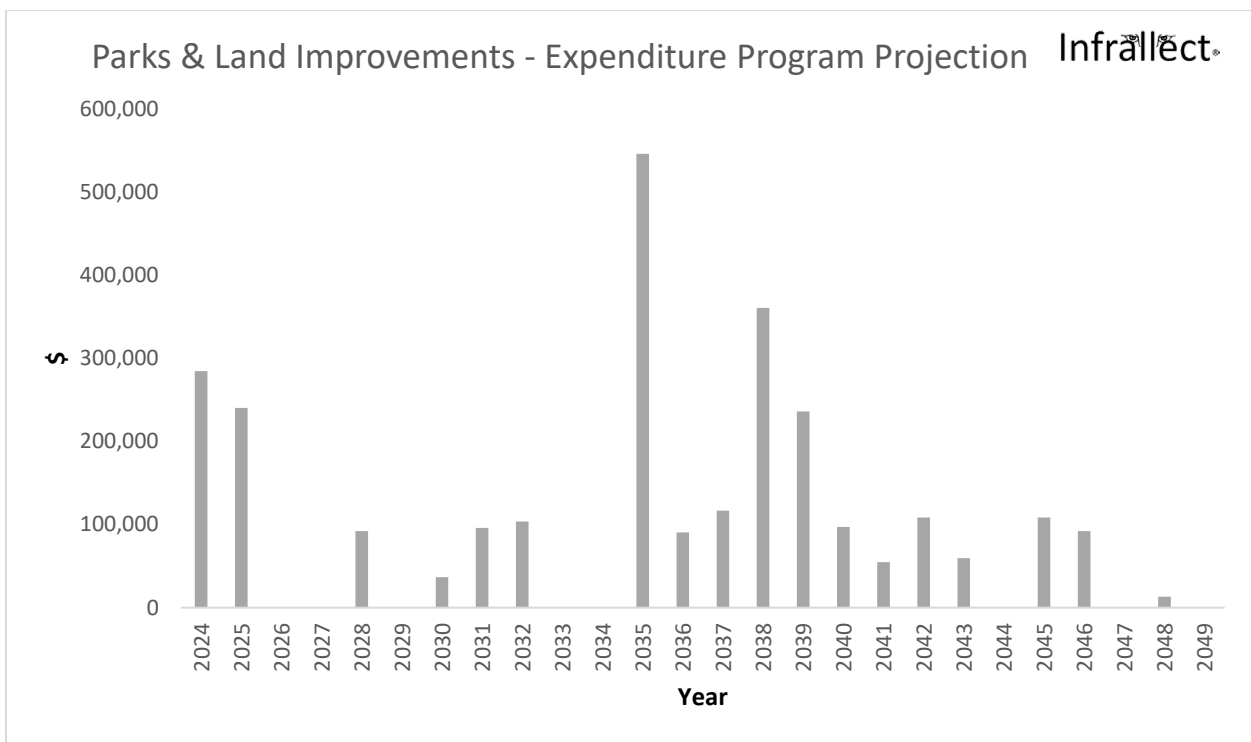


Figure 46 - Parks & Land Improvements - Expenditure Program Projection with Covid Inflation

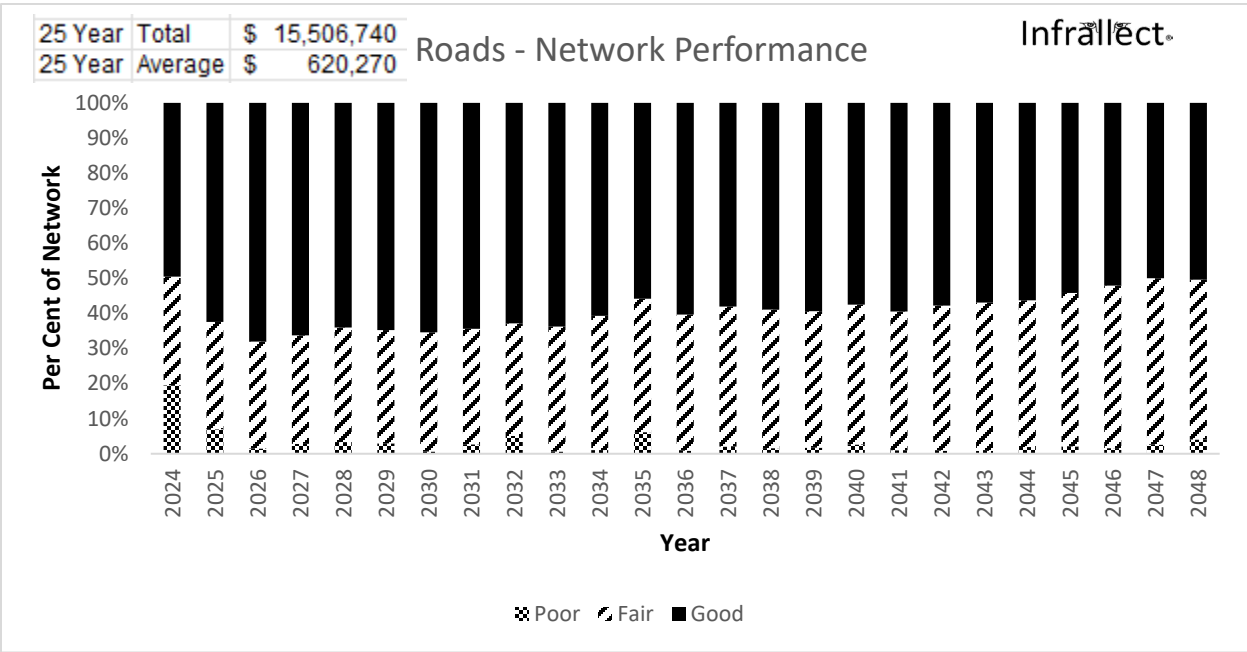


Figure 47 - Roads - Network Performance without Covid Inflation

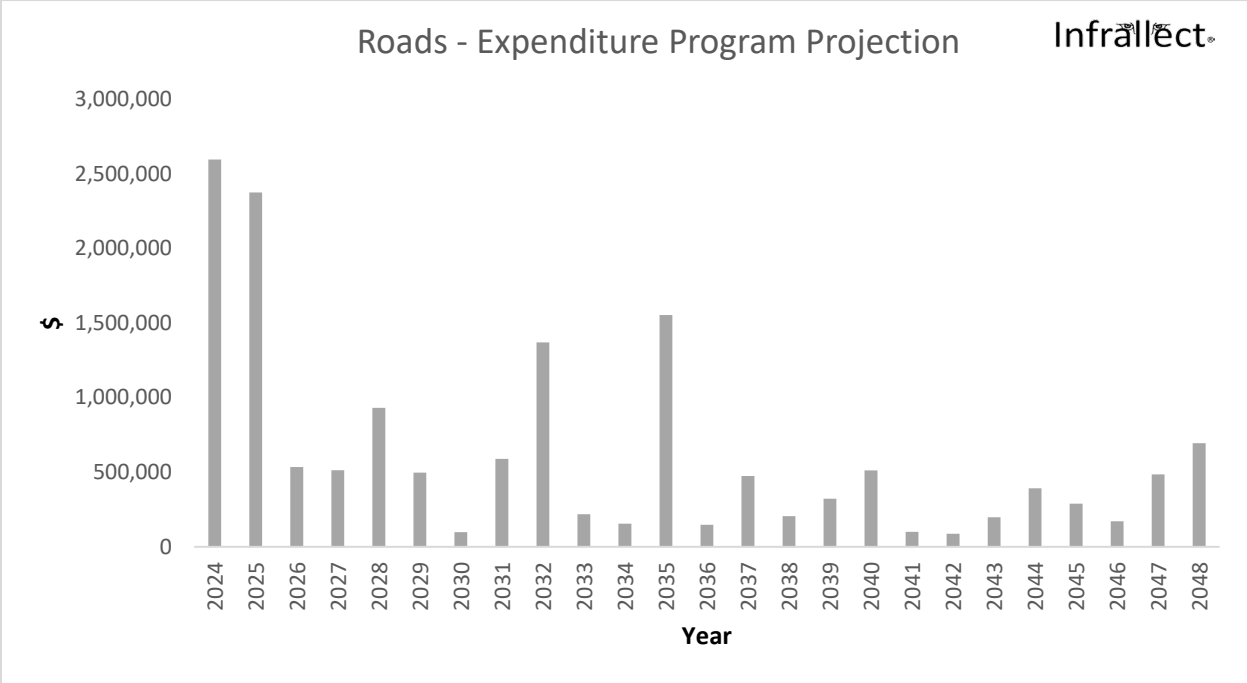


Figure 48 - Roads - Expenditure Program Projection without Covid Inflation

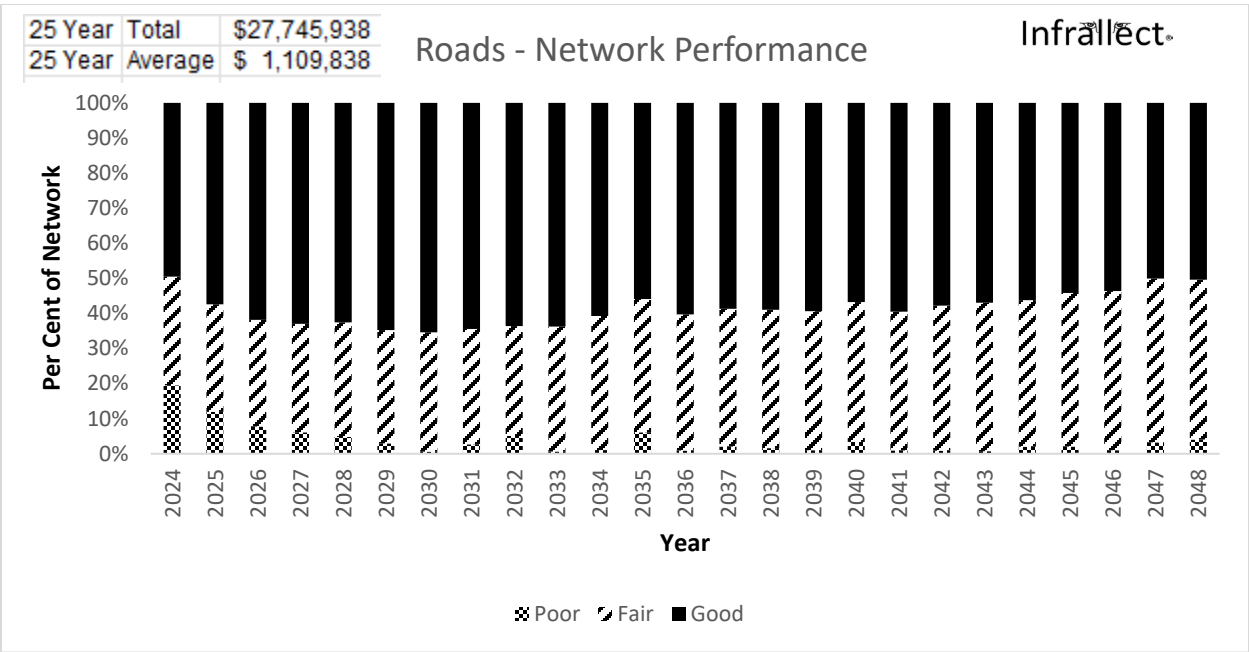


Figure 49 - Roads - Network Performance with Covid Inflation

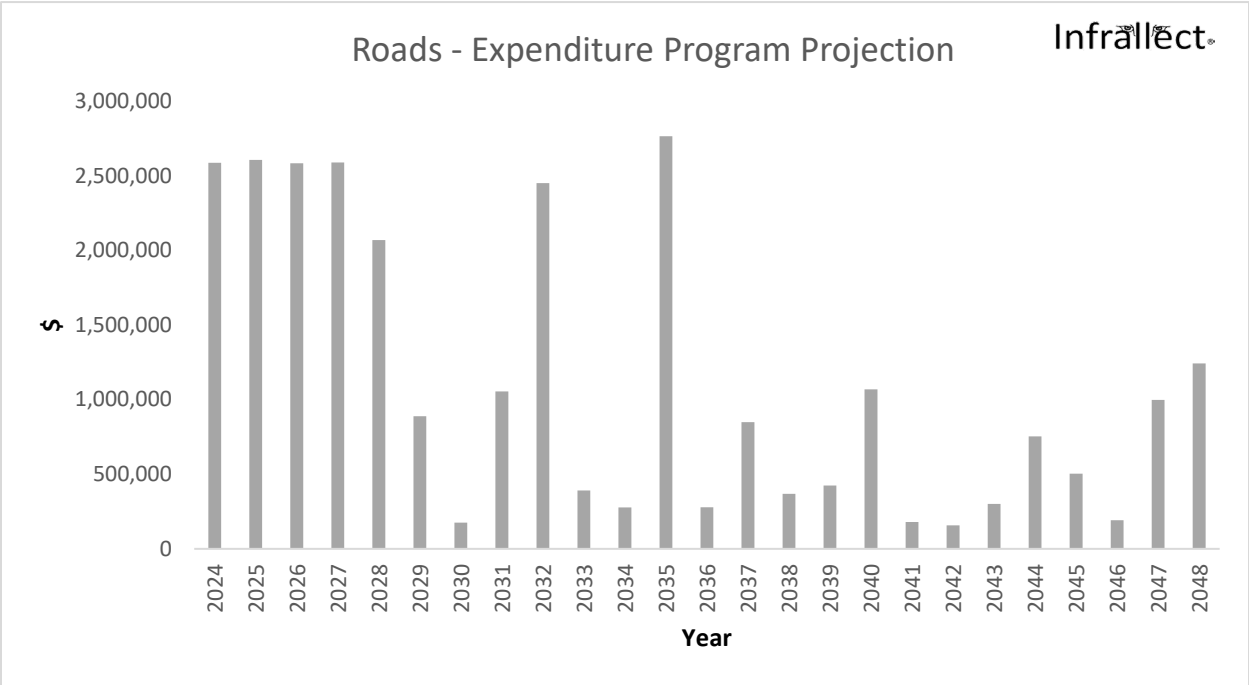


Figure 50 - Roads - Expenditure Program Projection with Covid Inflation

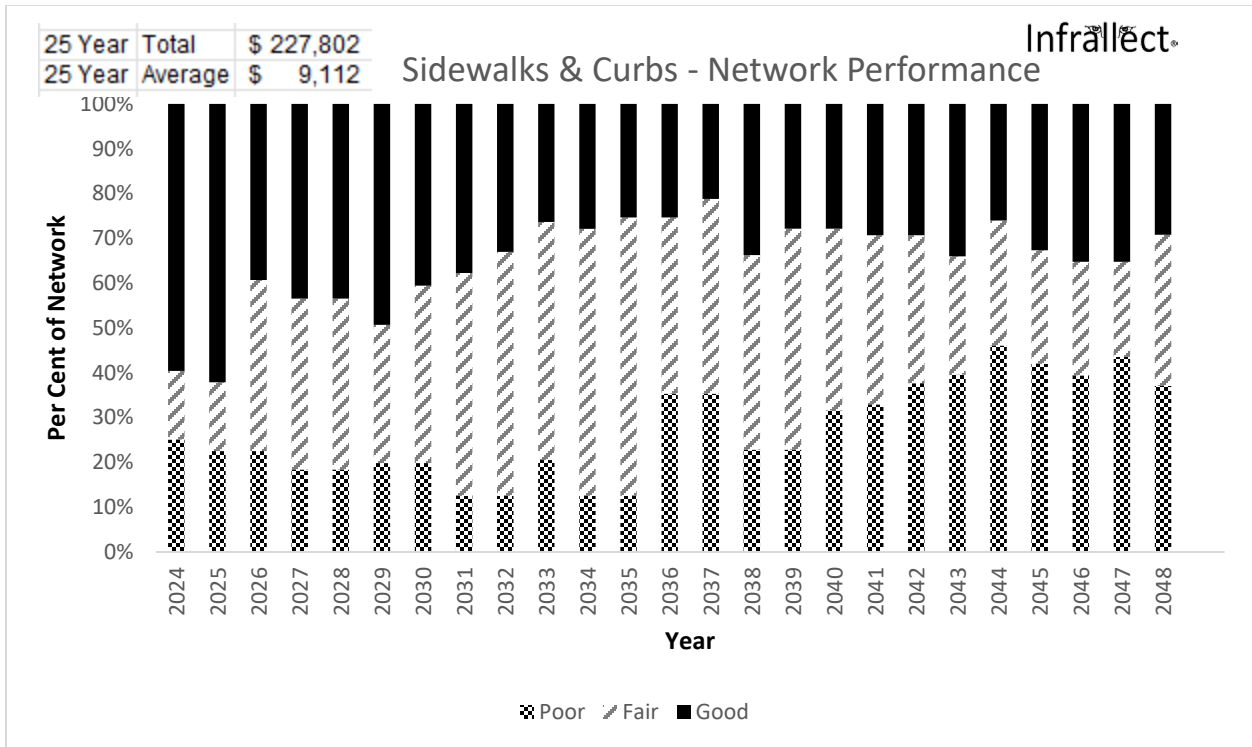


Figure 51 - Sidewalks & Curbs - Network Performance without Covid Inflation

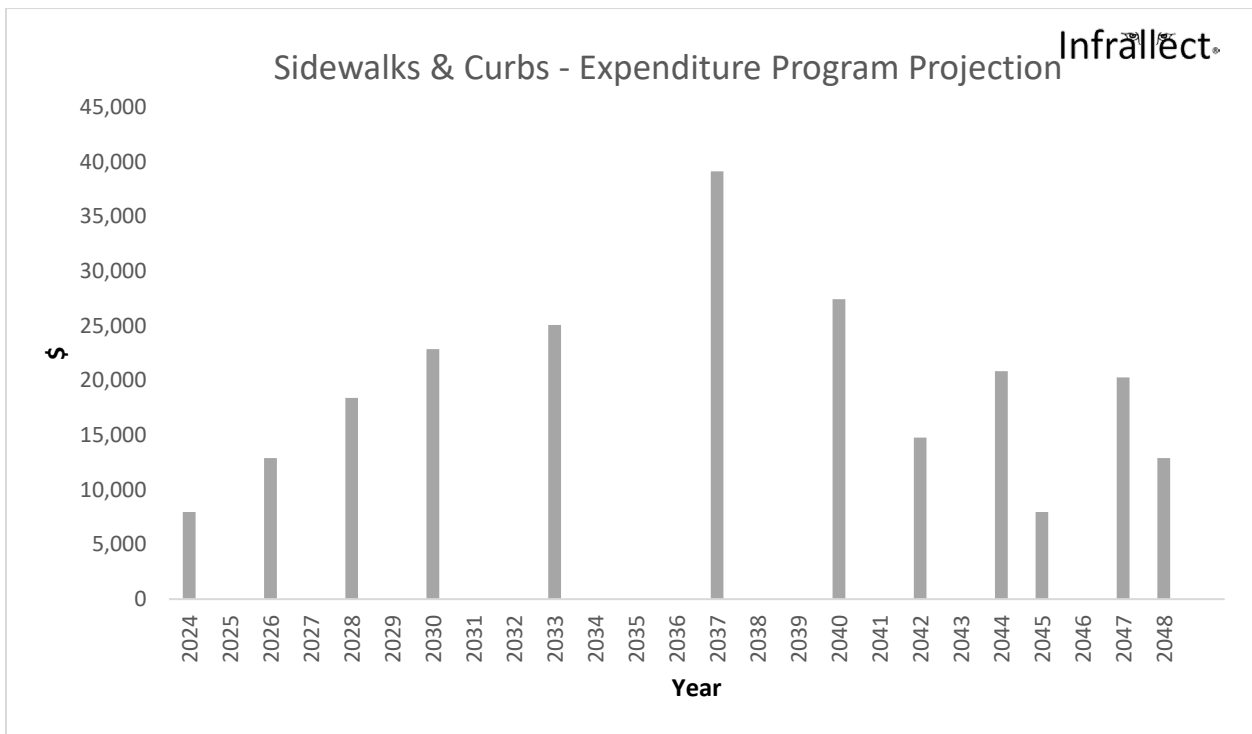


Figure 52 - Sidewalks & Curbs - Expenditure Program Projection without Covid Inflation

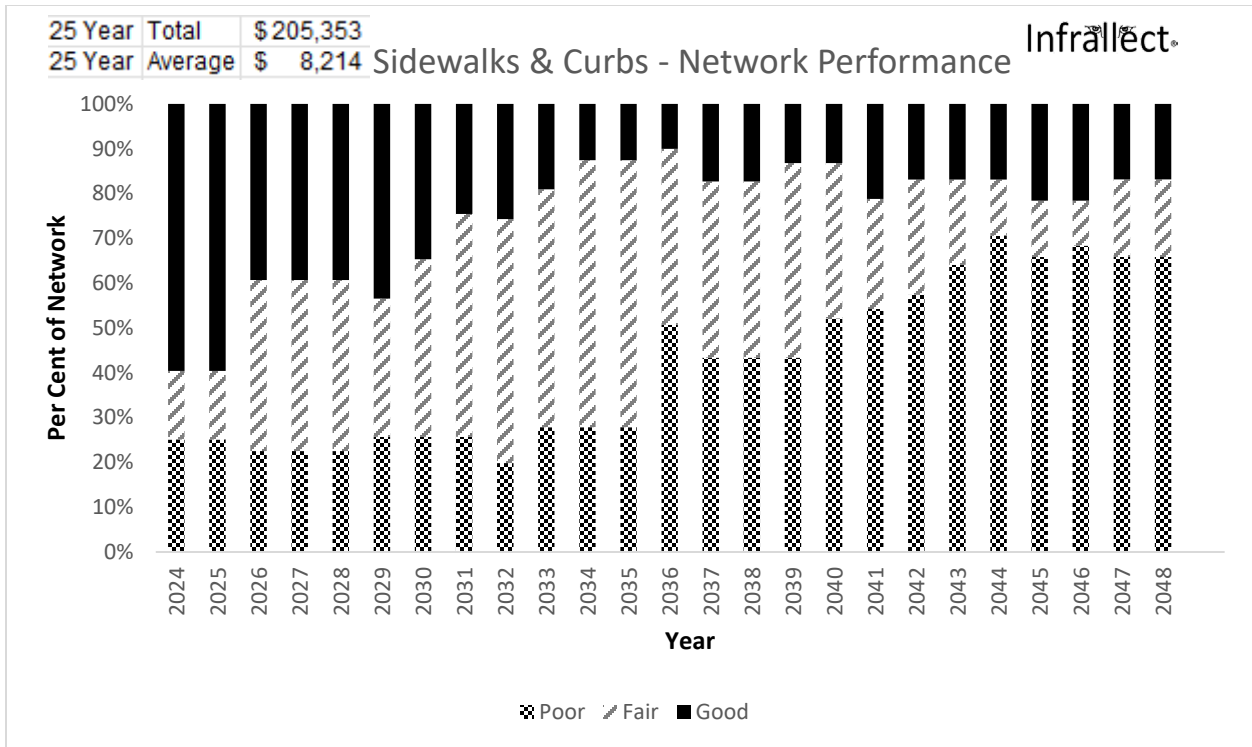


Figure 53 - Sidewalks & Curbs - Network Performance with Covid Inflation

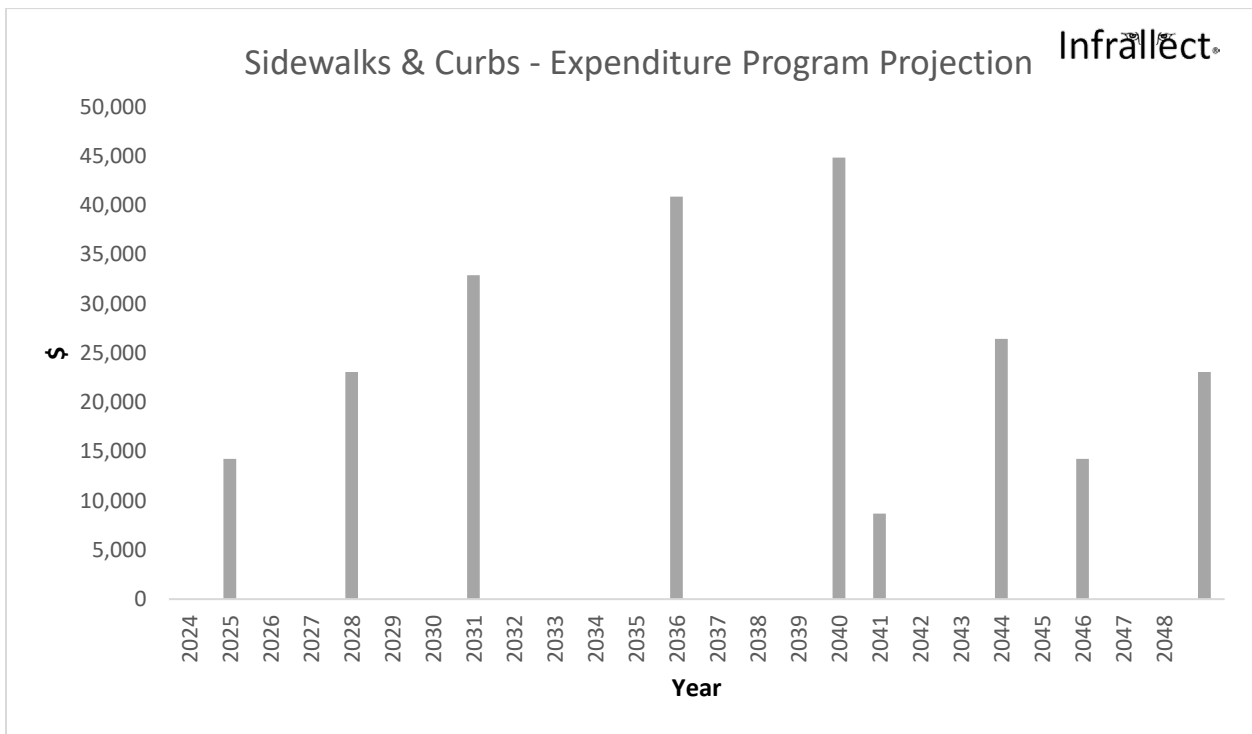


Figure 54 - Sidewalks & Curbs - Expenditure Program Projection with Covid Inflation

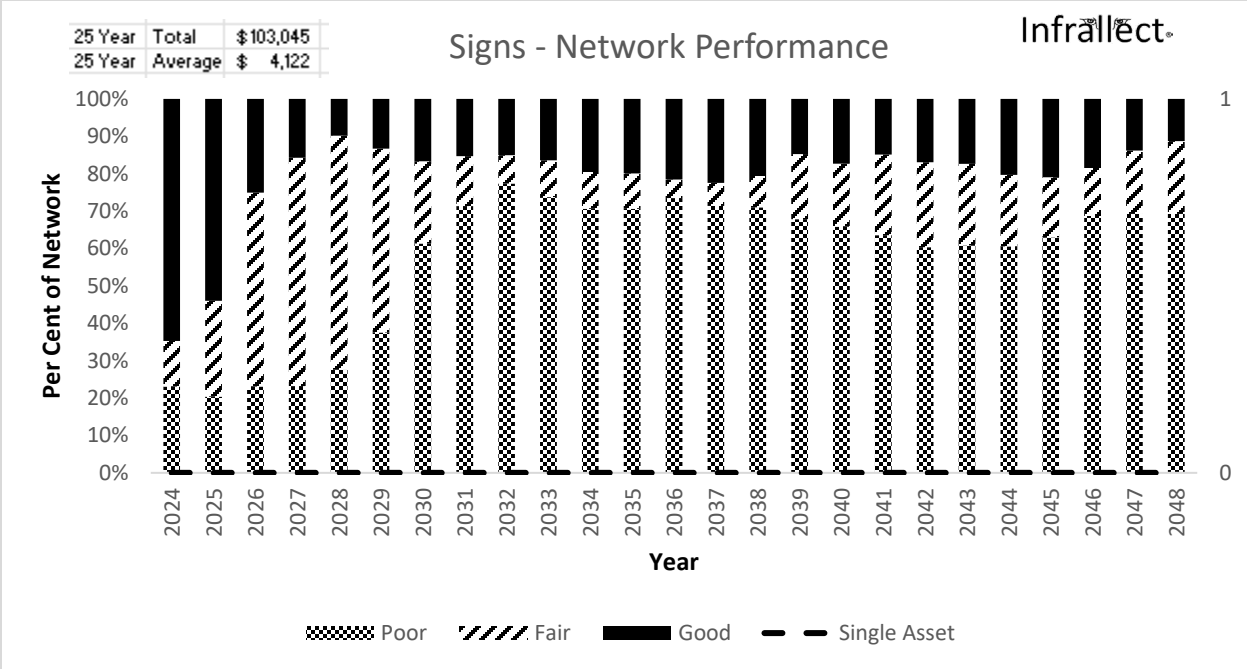


Figure 55 - Signs - Network Performance without Covid Inflation

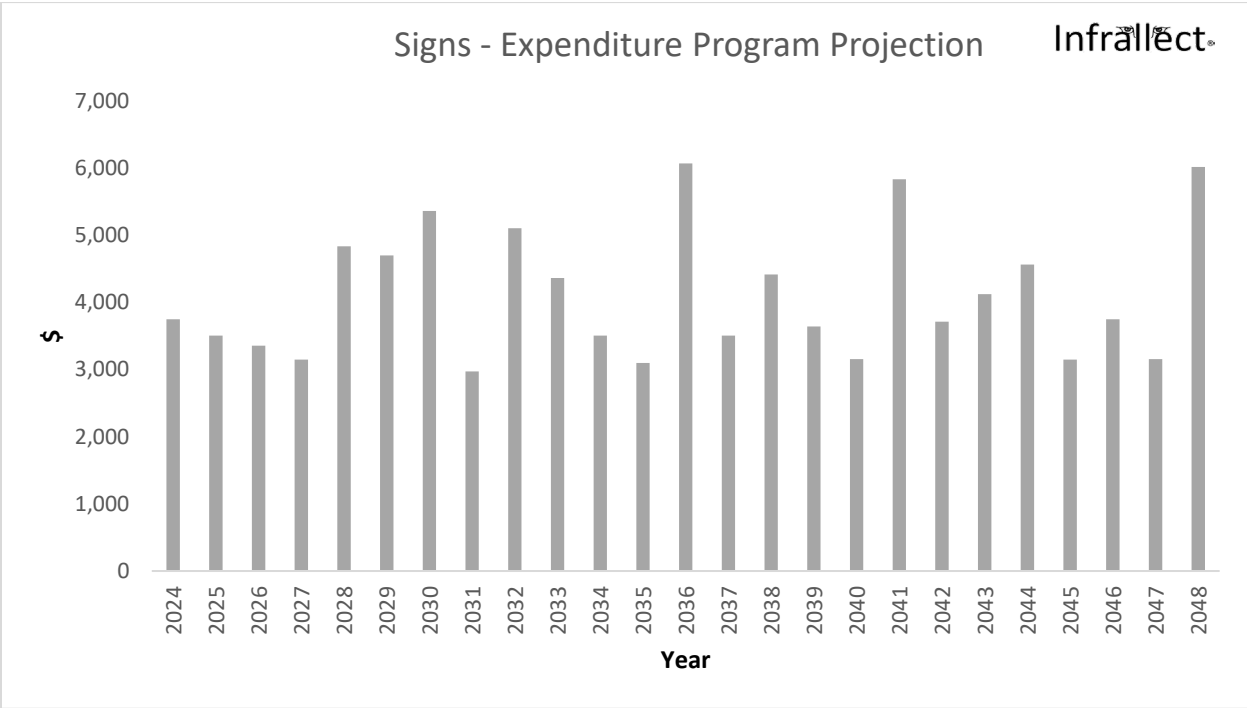


Figure 56 - Signs - Expenditure Program Projection without Covid Inflation

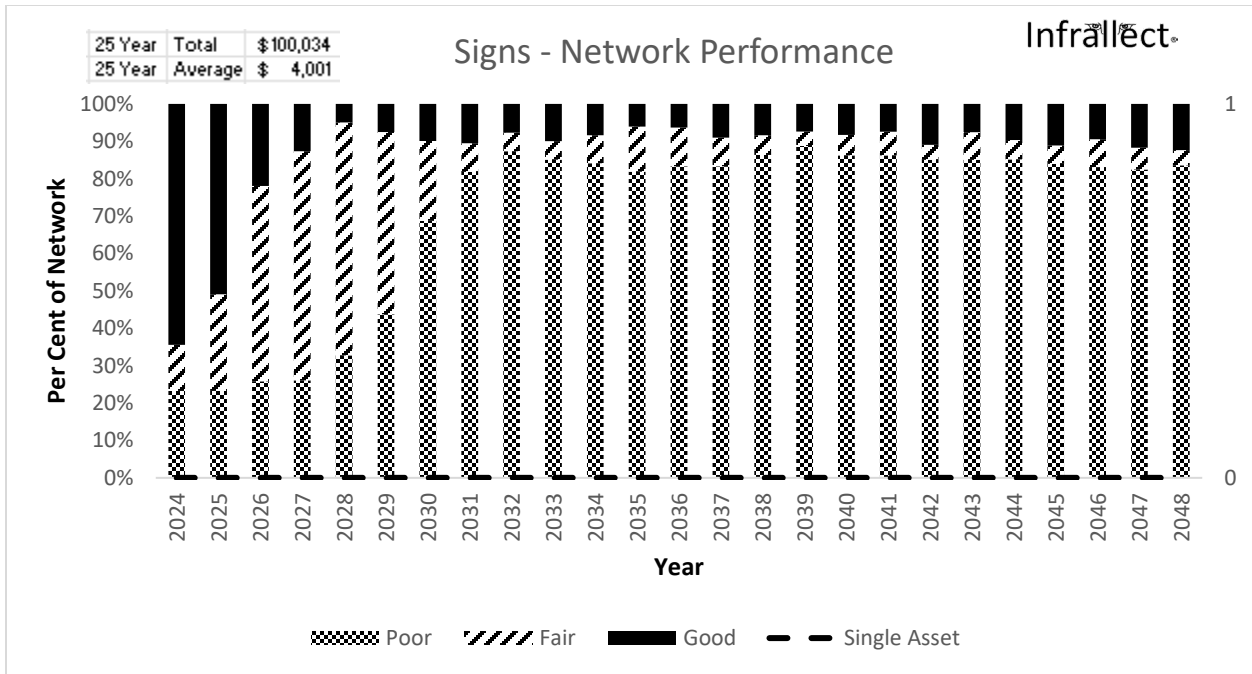


Figure 57 - Signs - Network Performance with Covid Inflation

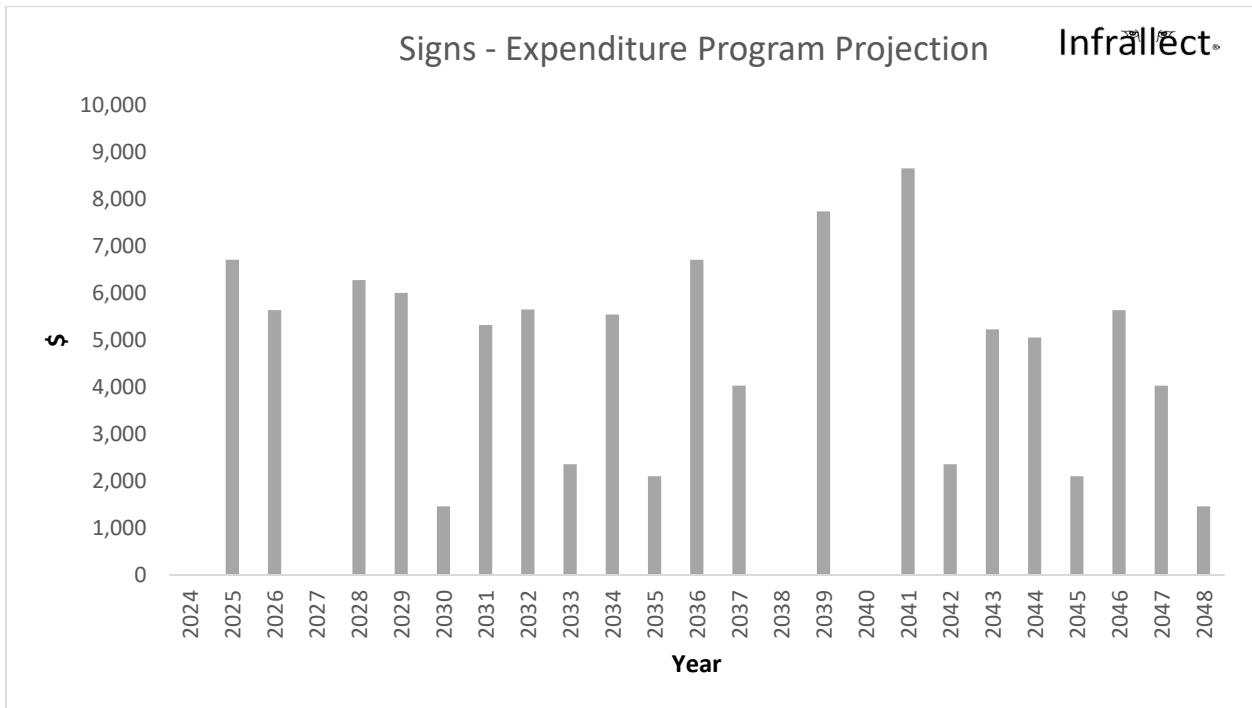


Figure 58 - Signs - Expenditure Program Projection with Covid Inflation

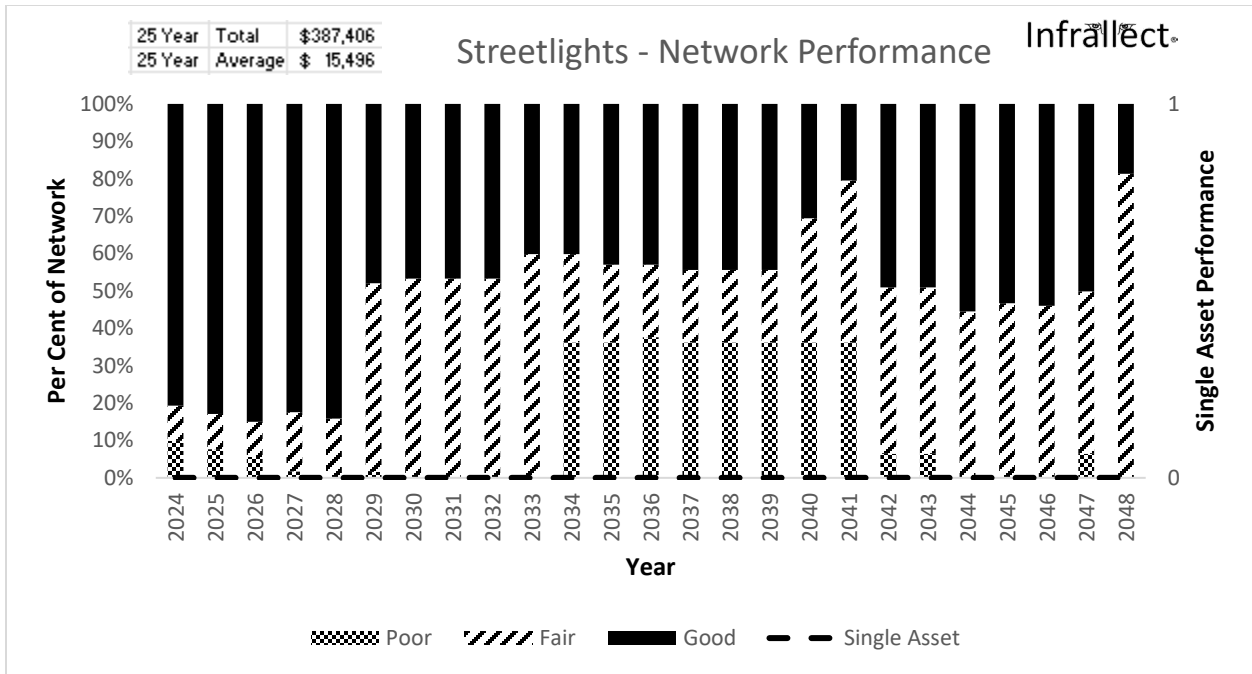


Figure 59 - Streetlights - Network Performance without Covid Inflation

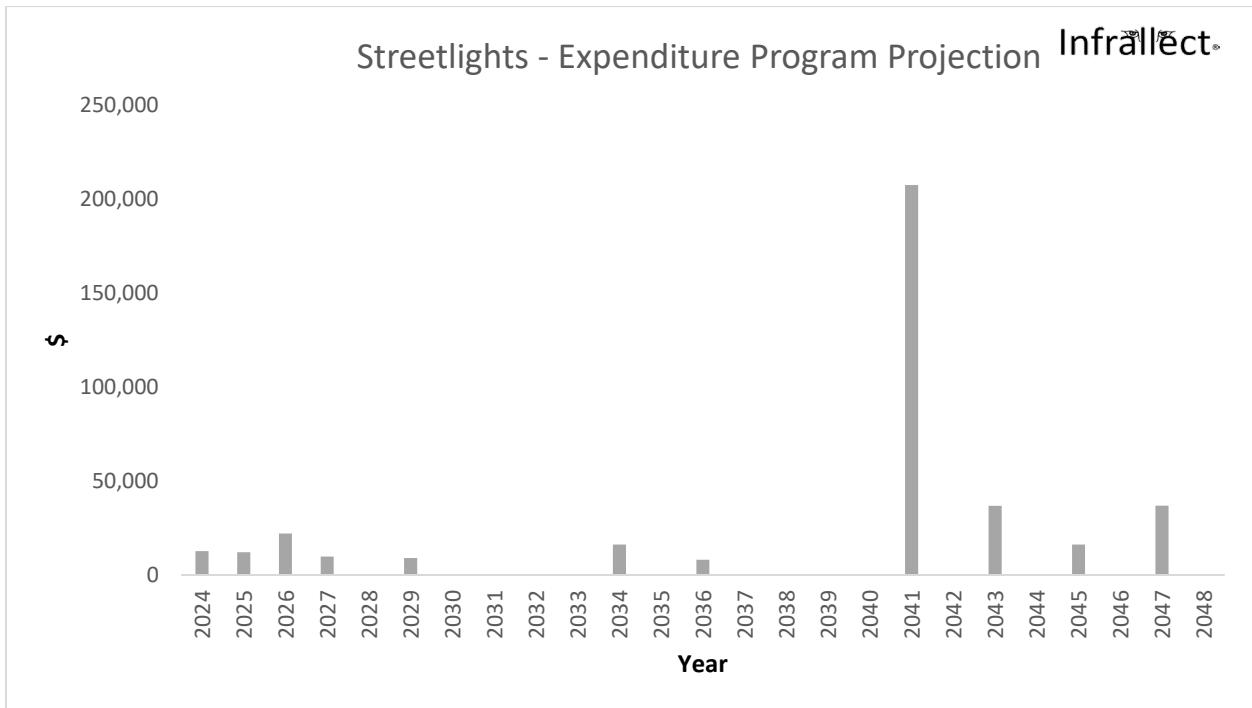


Figure 60 - Streetlights - Expenditure Program Projection without Covid Inflation

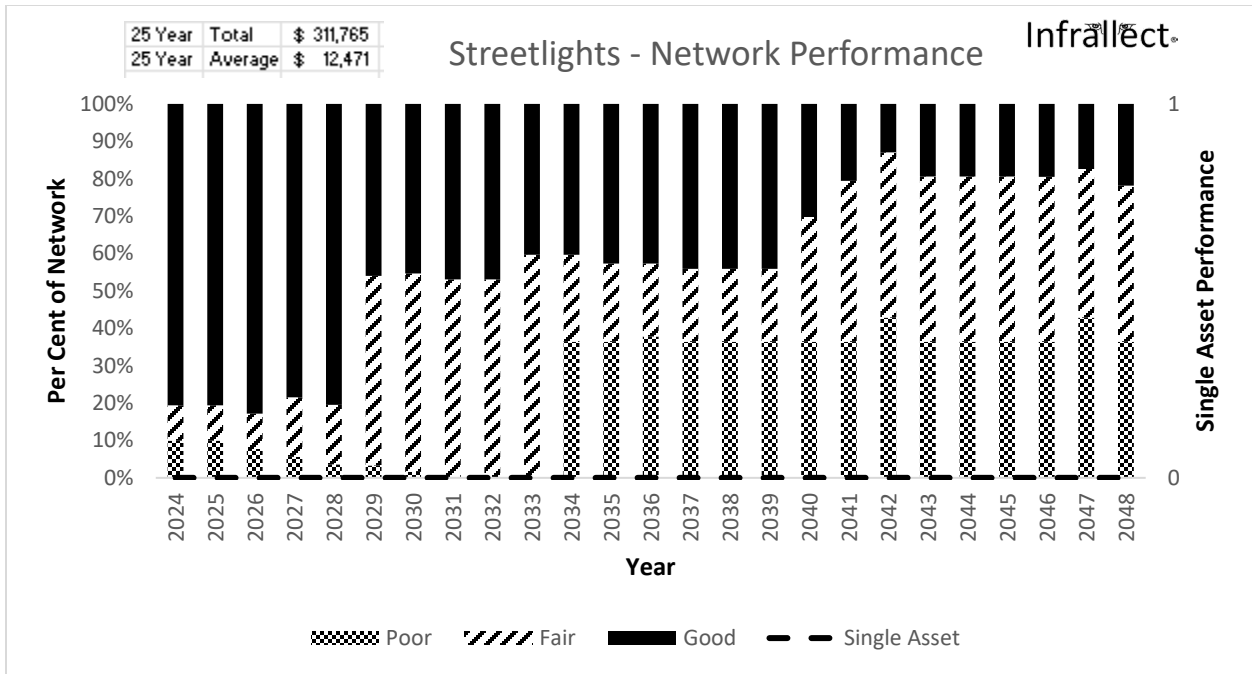


Figure 61 - Streetlights - Network Performance with Covid Inflation

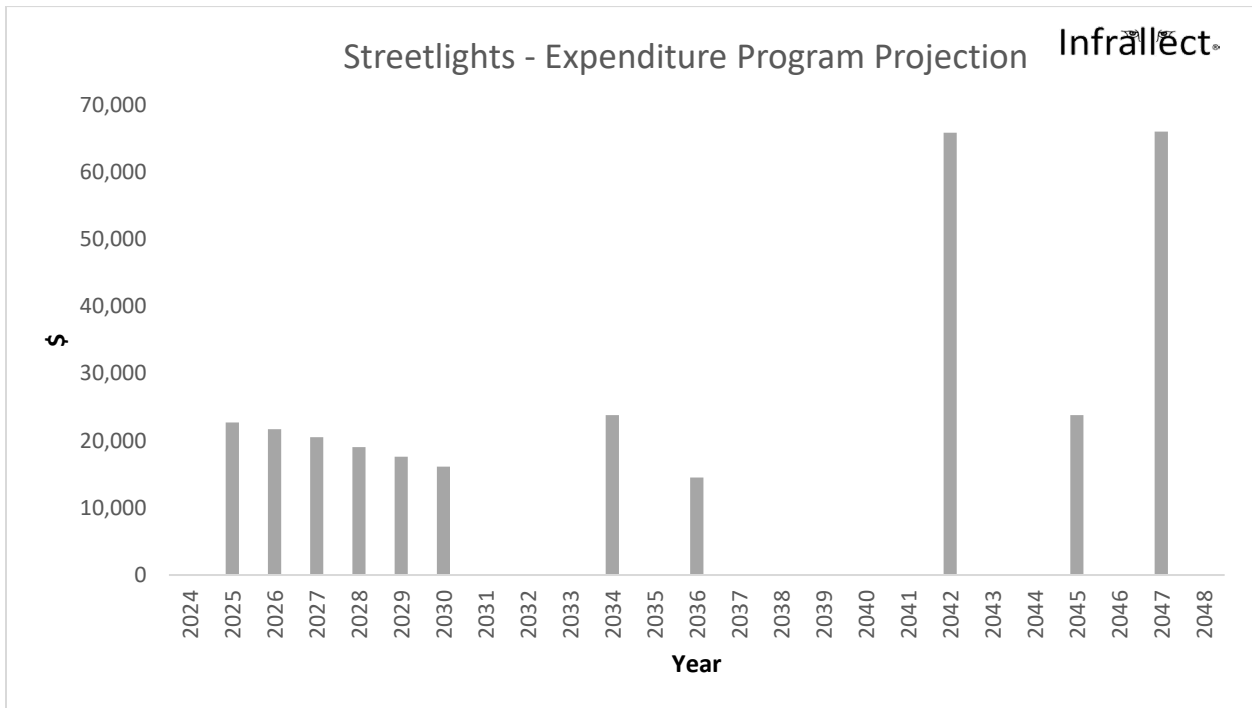


Figure 62 - Streetlights - Expenditure Program Projection with Covid Inflation

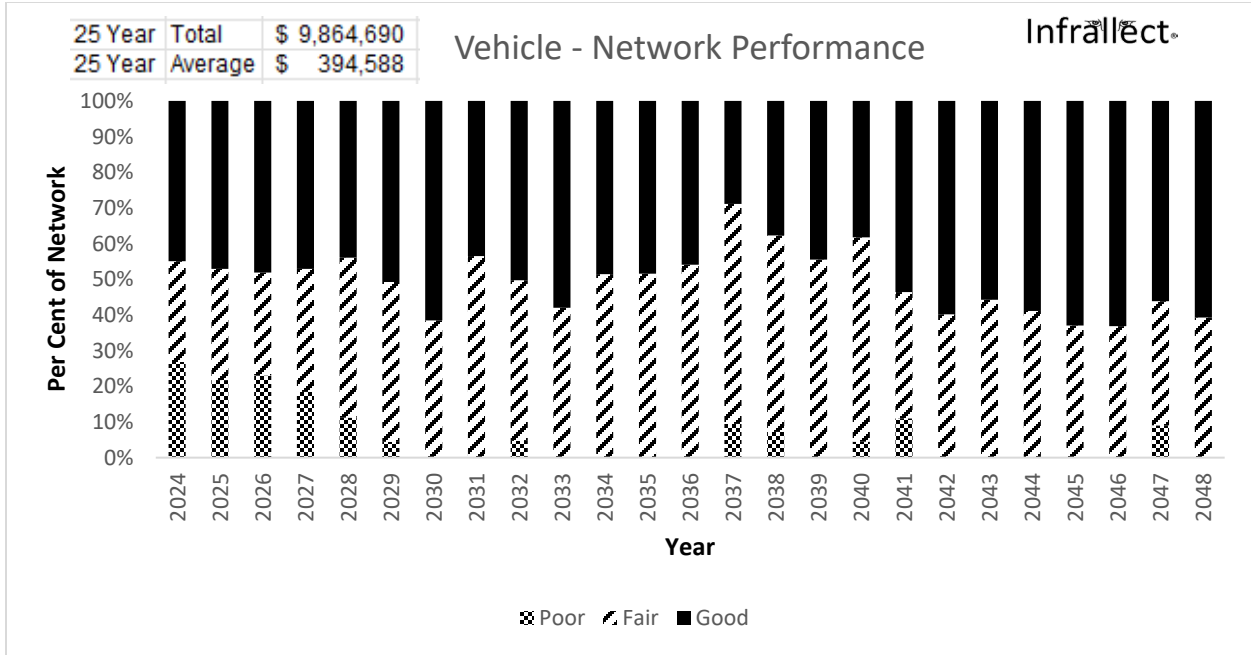


Figure 63 - Vehicle - Network Performance without Covid Inflation

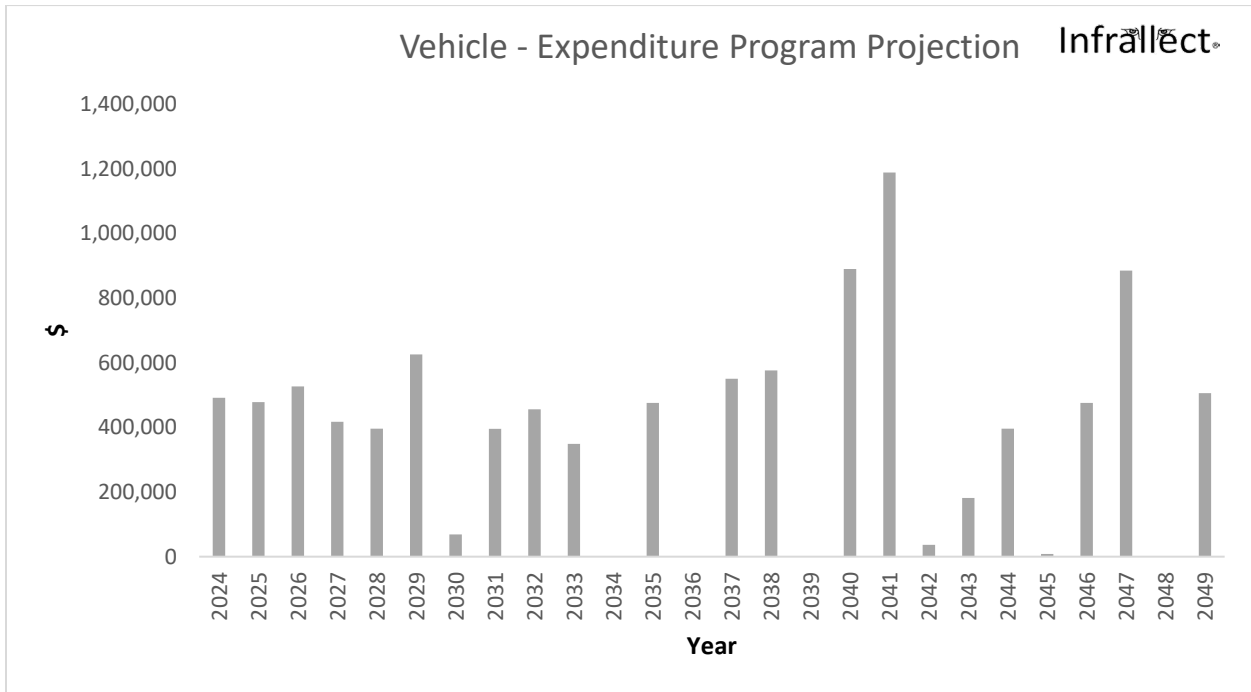


Figure 64 - Vehicle - Expenditure Program Projection without Covid Inflation

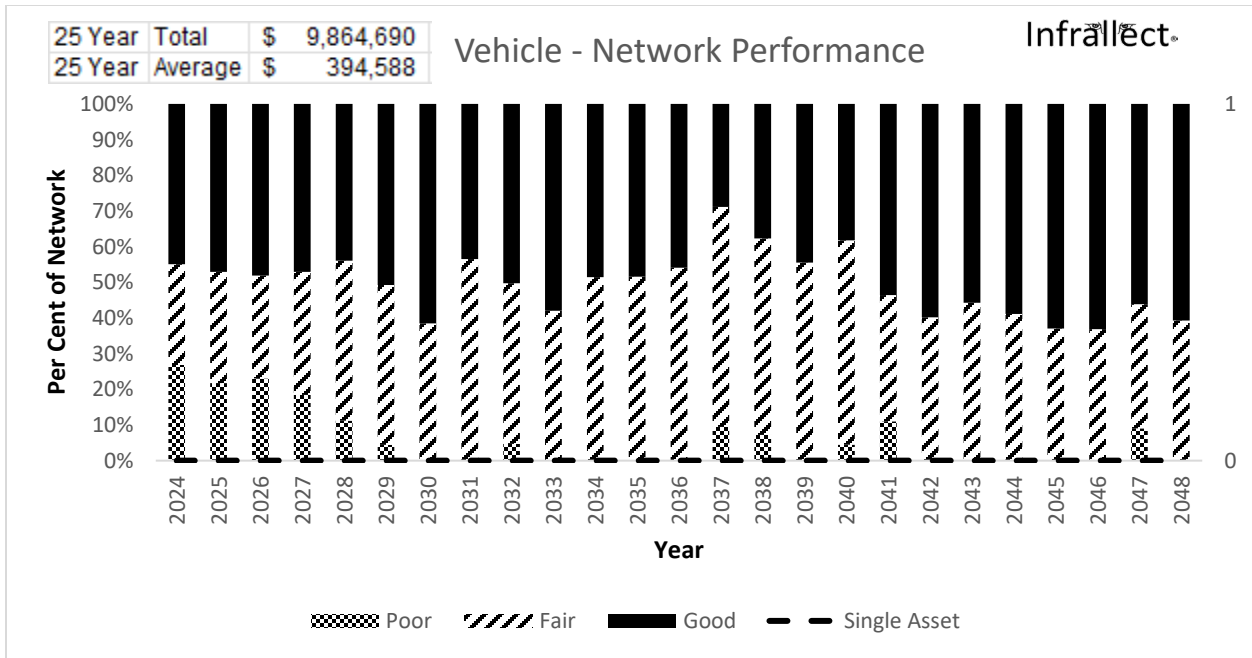


Figure 65 - Vehicle - Network Performance with Covid Inflation

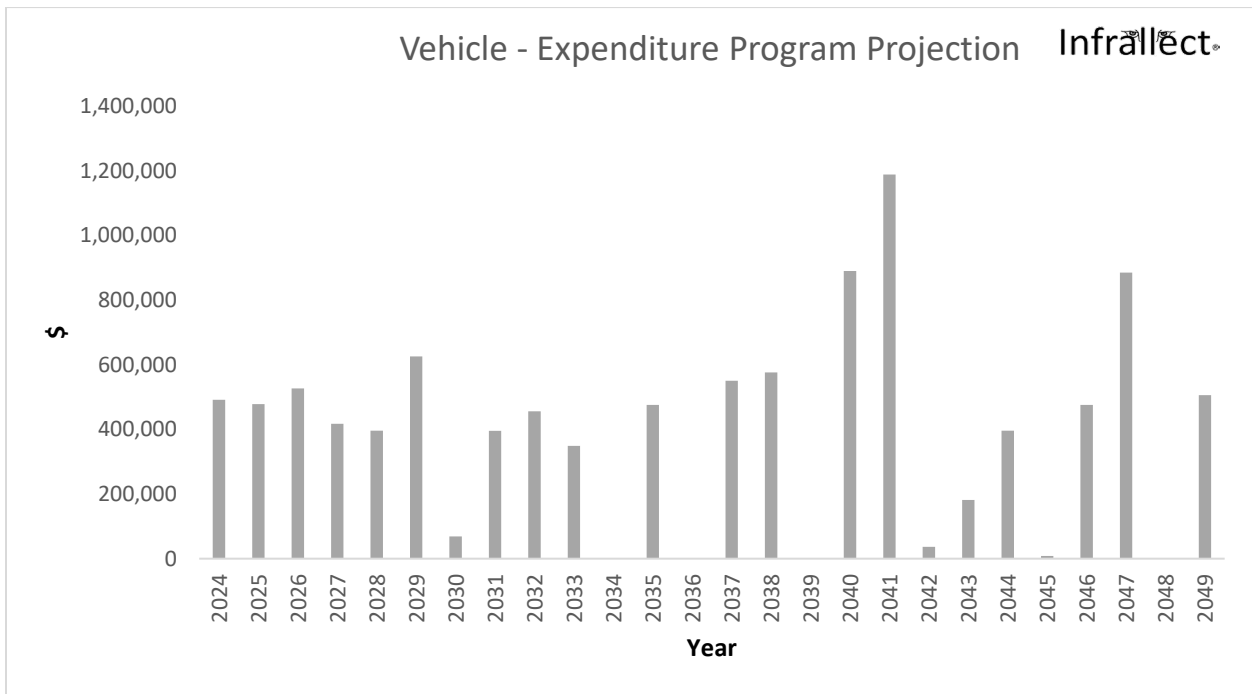


Figure 66 - Vehicle - Expenditure Program Projection with Covid Inflation

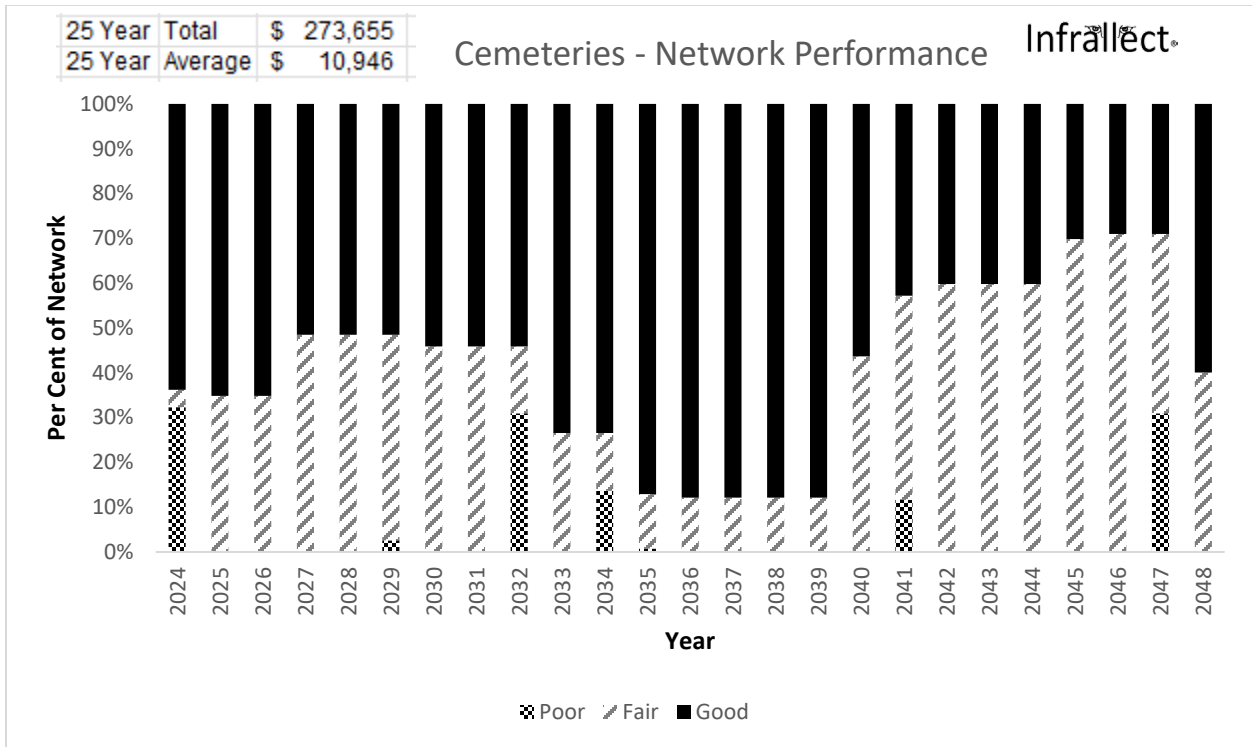


Figure 67 - Cemeteries - Network Performance without Covid Inflation

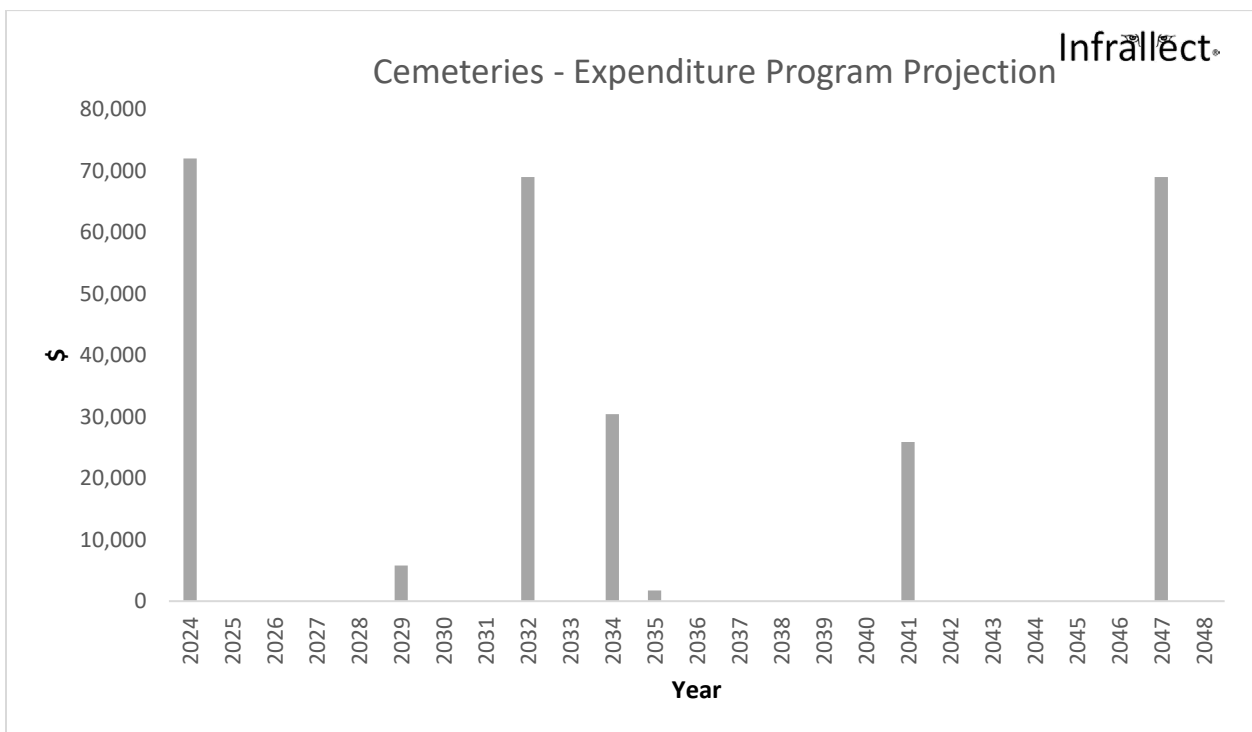


Figure 68 - Cemeteries - Expenditure Program Projection without Covid Inflation

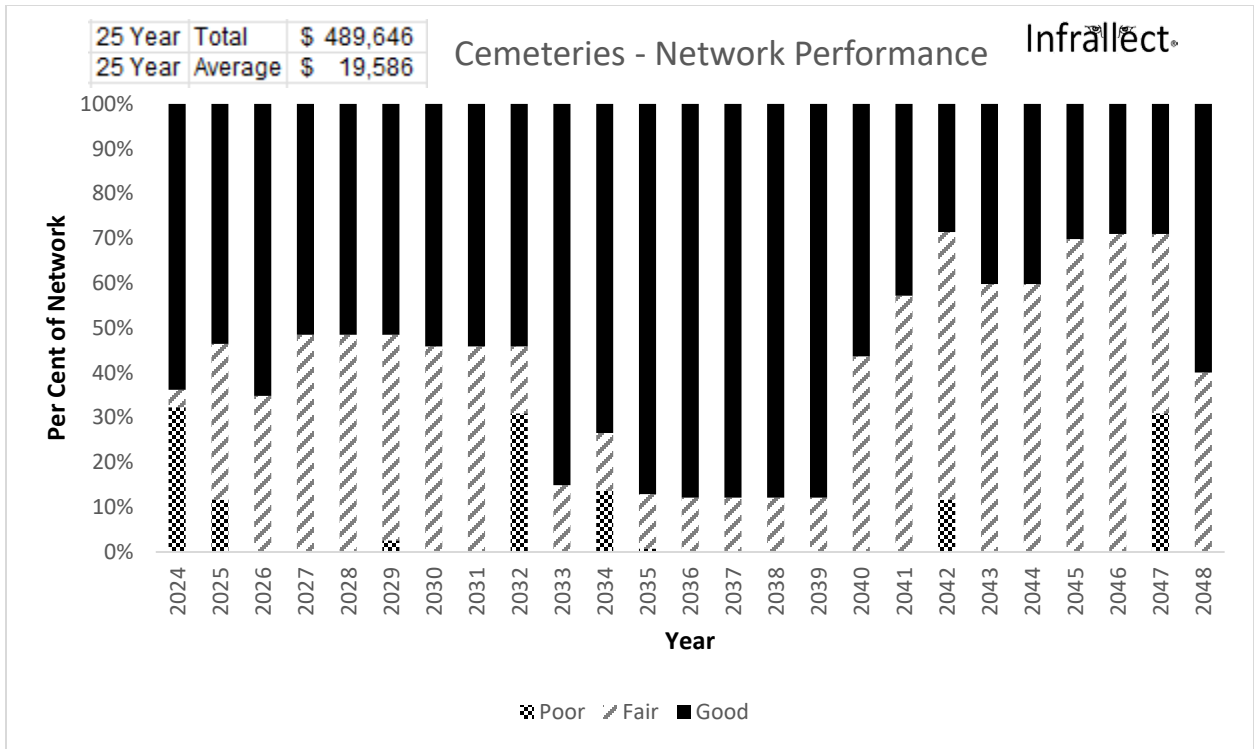


Figure 69 - Cemeteries - Network Performance with Covid Inflation

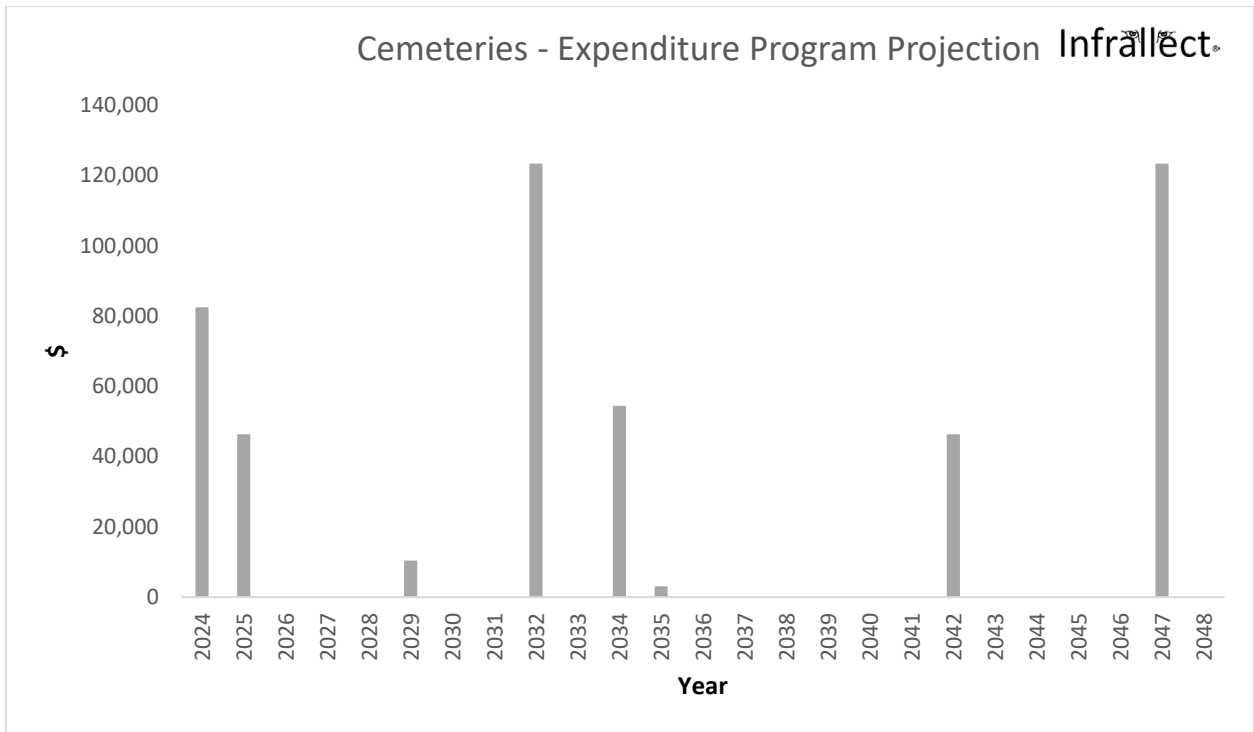


Figure 70 - Cemeteries - Expenditure Program Projection with Covid Inflation