Third Cycle Projects

SPC's Regional Traffic Signal Program was established by SPC and its planning partners in 2008 to assist local governments with improving traffic signal operations by optimizing traffic signal timings and upgrading existing signal equipment. The overall goals of the program are to reduce congestion, reduce delay to motorists, reduce negative impact that idling traffic has on air quality, and improve pedestrian safety.

Nearly $4 million in funding for the third cycle of the projects was made available through SPC via FHWA's Congestion Mitigation Air Quality Program (CMAQ) and participating local governments. Nationally, these types of signal projects, on average, have yielded $20 to $40 of public benefit for every $1 invested, making the most efficient use of the transportation infrastructure already in place. The third cycle of SPC's Regional Traffic Program yielded an overall average of $23 of public benefit for every $1 invested, which places this cycle in line with the national average for similar projects.

Projects completed in this third cycle of the program are shown here. In addition to retiming 148 intersections across 15 corridors, improvements included audible emergency vehicle preemption, signal controllers, new communication equipment and GPS units to facilitate signal coordination, and countdown pedestrian signals to increase pedestrian safety. Third cycle projects were substantially completed from Summer 2018 to Spring 2019.

### Retiming Benefits

**Total First Year Benefit (Operations)** $26,611,509  •  **Benefit Cost Ratio:** 21:1

- **270,700 vehicles travel these corridors on an average day**
- **1,320,281 reduced vehicle hours of travel**
- **976,044 gallons reduced fuel consumption**
- **68,127 kg reduced total CO2 pollutant emissions**
- **23,737 kg reduced total NO pollutant emissions**

- **$1,265,744 total life cycle project cost**
- **$2,883,189 20:1**
- **$4,121,043 41:1**
- **$29,593,877 23:1**
- **$2,515,302 5:1**
- **$4,709,511 5:1**
- **$203,195 15:1**
- **$4,159,543 5:1**
- **$309,100 13:1**
- **$13,960 16:1**
- **$4,717,351 41:1**
- **$29,593,877 23:1**

### Safety Benefits

**Total First Year Safety Benefits**

The safety benefits to pedestrians included bringing 128 pedestrian phases at 79 intersections up to current standards by increasing the pedestrian interval, installing 12 Lead Pedestrian Intervals (LPI) to 8 downtown Pittsburgh intersections, and installing 168 countdown pedestrian signals. This can help reduce in-vehicle pedestrian related crashes by 70% (countdown signals) and 60% (LPI) to provide a 32:1 benefit to cost for pedestrians. 37 Audible Emergency Preemption Systems were also installed with this program, which helps reduce emergency response time by 14-23%.

### Benefit-Cost Data

- **Benefit Cost Ratio:** 21:1
- **Total First Year Benefit (Operations)** $26,611,509
- **Total Cost ($)** $203,195
- **Annual LED Upgrades ($)** $2,883,189
- **Annual Emission Reductions ($)** $20,210
- **Annual Delay Reductions ($)** $2,515,302
- **Annual Emission Benefits ($)** $2,883,189
- **Annual Delay Benefits ($)** $4,121,043
- **Annual Fuel Consumption Benefits ($)** $4,709,511
- **Annual Fuel Consumption Reductions ($)** $29,593,877
- **Total Emission Benefits ($)** $2,021,101
- **Total Emission Reductions ($)** $209,151
- **Total Cost ($)** $261,613,509
- **Benefit-Cost Ratio:** 21:1

### Operational Benefits

- **Annual Delay Reductions ($)** $2,515,302
- **Annual Emission Reductions ($)** $20,210
- **Annual Emission Benefits ($)** $2,883,189
- **Annual Delay Benefits ($)** $4,121,043
- **Annual Fuel Consumption Benefits ($)** $4,709,511
- **Annual Fuel Consumption Reductions ($)** $29,593,877
- **Total Emission Benefits ($)** $2,021,101
- **Total Emission Reductions ($)** $209,151
- **Total Cost ($)** $261,613,509

### Environmental Benefits

- **Annual Emission Reductions ($)** $20,210
- **Annual Delay Reductions ($)** $2,515,302
- **Annual Fuel Consumption Benefits ($)** $4,709,511
- **Annual Fuel Consumption Reductions ($)** $29,593,877
- **Total Emission Benefits ($)** $2,021,101
- **Total Emission Reductions ($)** $209,151
- **Total Cost ($)** $261,613,509

### Additional Benefits

- **Annual LED Upgrades ($)** $2,883,189
- **Annual Emission Reductions ($)** $20,210
- **Annual Delay Reductions ($)** $4,121,043
- **Annual Emission Benefits ($)** $2,883,189
- **Annual Delay Benefits ($)** $4,121,043
- **Annual Fuel Consumption Benefits ($)** $4,709,511
- **Annual Fuel Consumption Reductions ($)** $29,593,877
- **Total Emission Benefits ($)** $2,021,101
- **Total Emission Reductions ($)** $209,151
- **Total Cost ($)** $261,613,509

### Key Description

- **Vernon Avenue - Cranberry Borough - SINC-UP**
- **5091000**
- **2008**
- **$209,151**
- **15:1**
2008-2019 Program Benefit-Cost Ratio: 51:1

SPC has now completed three cycles of this important regional program. Together the three cycles have invested nearly $11 million to improve 649 signalized intersections across 77 municipalities in our region. Through the first three cycles of this program, results have yielded $51 of public benefit for every $1 spent in terms of reduced delay, reduced vehicular stops, and reduced fuel consumption and emissions.

Third Cycle Project Partners

Federal Highway Administration • Southwestern PA Commission and Planning Partners
PennDOT Central Office • Whitman, Requardt & Associates Consultant Team

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