



## SOUTH CAROLINA REVENUE AND FISCAL AFFAIRS OFFICE

### WIRELESS 9-1-1 FUND COST STUDY

AS REQUIRED BY SC CODE OF LAWS §23-47-65(C)(5)

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**Purpose.** SC Code of Laws §23-47-65(C)(5) requires Revenue and Fiscal Affairs (RFA) to conduct a cost study to be submitted to the House Ways and Means Committee and Senate Finance Committee within one year from the section's effective date. The cost study must include information to assist in determining whether to adjust the CMRS 911 charge to reflect actual costs incurred by PSAPs or CMRS providers for compliance with applicable requirements of the strategic plan. The report may also include any relevant or appropriate information to assist the General Assembly in determining whether future legislation is necessary.

**Background.** SC Code of Laws §23-47-10 et seq originated in 1991 and established criteria for securing funding from landline telecommunications to support local public safety answering points (PSAPs) in providing 9-1-1 emergency call services. As wireless communications expanded and landline volumes eventually began to decrease in South Carolina, further legislation was added in 1998 and 2011 to include additional funding sources from wireless telecommunications, including VoIP and prepaid wireless. The Department of Revenue was charged with administering collection and transfer of these funds into an account with the State Treasurer's Office, and RFA was tasked with managing the account to reimburse the PSAPs for costs incurred. The South Carolina 9-1-1 Advisory Committee, consisting of representation from local jurisdictions as well as telecommunications service providers, was established to serve as a technical resource and advise RFA with cost reimbursement procedures from the wireless fund.

Over the past decade, the technology for processing 9-1-1 calls has changed as analog (copper wire) lines are being replaced with internet protocol (IP) based communication paths. These IP networks allow for enhanced capabilities with resiliency to ensure multiple transmission paths for each call; redundancy to ensure multiple backup locations are available for each PSAP; location accuracy to ensure each call is routed to the appropriate PSAP; and expanded data delivery for citizens, including text, images, and video. However, with RFA's role limited to processing reimbursements for costs already incurred, each PSAP would be required to implement this new technology, called NextGen (NG9-1-1), and incur substantial upfront investments. Under this method, the level of service each local jurisdiction could provide would vary significantly depending on access to funding and available expertise.

**Strategic Plan.** This most recent legislation (Act 60 of 2019) expanded the responsibilities of RFA related to emergency services and systems by authorizing it to develop and implement a strategic plan to provide for a more efficient solution of transitioning to NG9-1-1 services. To ensure the best outcome that would meet the needs of all 9-1-1 centers across the state, RFA worked closely with a

consulting group specializing in communications technology (L.R. Kimball), the local PSAP jurisdictions, and the South Carolina 9-1-1 Advisory Committee to develop the strategic plan. This comprehensive plan provides for the statewide transition to NG9-1-1 technology including the network platform (ESInet) and core services (*as illustrated in Figure 1*) to be managed by the State. The Advisory Committee approved the plan and recommended RFA pursue its implementation.

**Figure 1**

Transitioning from E9-1-1 to NG9-1-1 technology is similar to moving from a voice only cell phone to a “smart” device with a data plan...the capabilities are greatly enhanced but require infrastructure and resources to support the capacity, speed, and security measures associated with that data.

The statewide NG9-1-1 system consists of a comprehensive IP-based communications network (ESInet) accompanied with multiple data storage facilities in geographically diverse locations, plus a combination of hardware, software, contractual services, and data management to provide core NextGen services such as:

- Expanded means of communication sharing between citizens and PSAPs (texts, images, etc.)
- All digital environment reducing call routing times from 20-30 seconds to less than 5 seconds
- NENA-compliant security measures to protect data including tier level III storage facilities and border control functions incorporating firewalls, admission controls, and session controls
- Precise caller location information software (currently, legacy systems provide a street address for a 20-story building using cell tower triangulation; NextGen uses digital GPS software to identify which floor the caller is on)
- Cost effective backup capabilities between call centers with real-time call routing decisions
- Interfaces to facilitate robust, integrated data sharing between PSAPs to assist in call transfers
- Temporary gateways (links) to legacy systems to facilitate communications during the transition process

Under the strategic plan, RFA will work with a contractual partner to consolidate the technology and system under a single statewide plan with redundancy capabilities that would otherwise require additional local expenditures. As opposed to each local jurisdiction creating its own network, PSAPs will be able to tie into an interconnected statewide ESInet. The statewide plan is expected to reduce the overall costs necessary to transition to NG9-1-1 while ensuring a consistent level of service throughout the state. Absent the consolidation of technology with the statewide system, RFA would continue to reimburse local jurisdictions for implementing NG9-1-1 with individual systems in each locality at a greater overall cost statewide.

**Implementation.** RFA issued a Request for Proposals (RFP) through State Fiscal Accountability Authority's Materials Management Office on September 9, 2019 to solicit a contract for services to implement and manage NG9-1-1. Through this procurement process, a panel consisting of two RFA 9-1-1 program staff and three local PSAP representatives reviewed a total of six proposals and published an intent to award the contract to NextGen Communications, Inc. (Comtech) on June 26, 2020. Comtech has over twenty years' experience working with 9-1-1 systems and has been managing NG9-1-1 projects since 2011 including live production core services in eight states across the country (Iowa, Tennessee, Connecticut, Massachusetts, Washington, Maine, New Hampshire, and Vermont). If no protests are filed to the procurement award, Comtech will begin developing the statewide ESInet with core services on July 13, 2020 with anticipated system availability to begin transitioning PSAPs by the fall of 2021. In keeping with the strategic plan, PSAPs will be onboarded to the new system using a staggered approach over a period of three to five years to account for equipment and service contract end of life schedules.

The ESInet will serve as a dedicated network used solely for processing 9-1-1 communications. If PSAPs have limited or no broadband access, special construction will be required to provide fiber connectivity capable of supporting the large volumes of data anticipated with the new technology (10-100 Mbps). PSAPs will also need multiple physically-diverse access links to connect with the network, so costs may vary significantly per location based on current resources available. The network will be designed using a multi-protocol label switching (MPLS) technique to improve reliability and efficiency of communications transmissions. To further secure and support the network, Comtech will provide multiple, geographically diverse data backup sites with enhanced firewall protection and uninterrupted power systems (UPS).

The network will serve as the platform for providing the core services of NextGen technology (as listed in Figure 1). Comtech will provide software, applications, data validation, protocols, and policy functions to deliver enhanced services including caller location tracking for proper jurisdictional responses, call overload management and PSAP interoperability for high volume incidents, secure data transmissions and transfers, and expanded means of communicating with 9-1-1 centers such as text messaging and imaging. To ensure system functionality throughout the implementation process, Comtech will provide legacy gateways to maintain connectivity with PSAPs even before they onboard to the new system.

**Fiscal Model.** The primary goal of the strategic plan is to pay for the NG9-1-1 technology, continue to reimburse local jurisdictions for their costs, and maintain sufficient reserves within the 9-1-1 fund. Since RFA will be responsible for paying the NG9-1-1 costs directly rather than just reimbursing locals for a percentage of actual costs, maintaining a sufficient operating reserve will be critical to ensuring fiscal responsibility. For the purposes of this study, we have targeted a reserve minimum fund balance of 20%-30% of annual distributions, or approximately four months' worth of expenditures. However, this level may be adjusted pending further analysis. To accomplish the financial objectives of the strategic plan, RFA developed a ten-year forecast model for the wireless 9-1-1 fund. Annual revenue projections include collections from the wireless 9-1-1 fee with an average annual growth rate of 2.3% as well as federal grant funds awarded for the project in excess of \$2.3 million. Forecasts for annual distributions include disbursements to

local PSAPs as well as state costs for NG9-1-1 technology. As it relates to disbursements, the current reimbursement percentage for costs incurred by the PSAPs, currently at 80%, is expected to decrease over time as more costs are paid by the State upfront.

The model forecasts the annual fund balance by estimating revenues using three different scenarios with the wireless 9-1-1 fee:

1. Maintaining the fee at the current rate of \$0.62 per month per device through 2029
2. Adjusting the fee at some point in the future between the current rate of \$0.62 and the statutory cap of \$0.67
3. Adjusting the fee at some point in the future to the statutory cap of \$0.67

*(note: the statutory cap is calculated using the average monthly landline charges paid in South Carolina)*

As previously mentioned, the model forecasts the total distributions by accounting for projected decreases in the cost reimbursement percentage and additional costs associated with NG9-1-1. Although the State’s costs for NG9-1-1 initially represent an increase in total distributions, some cost offsets should occur as PSAPs join the statewide system. The model analyzes the annual impact of these projections on the fund balance and establishes a threshold for minimum operating reserve to ensure financial solvency.

The NG9-1-1 Fiscal Model, as illustrated on Chart #1, forecasts the fund balance over the next ten years for statewide NG9-1-1 implementation using the assumptions listed below:

- Adjusted fee represents a potential fee increase to \$0.64 beginning January 2022
- Projected revenue from federal grant of \$2.33 million between 2020 and 2021
- Reduction of the cost reimbursement percentage from 80% to 70% in 2023
- Second reduction of the cost reimbursement percentage to 65% in 2026
- Targeted range for operating reserve (minimum fund balance) of 20%-30% of total annual distributions (approximately \$8-\$12 million)
- Average annual growth rate of total collections at 2.28%
- Average annual growth rate of total cost reimbursements at 2.64% *(prior to planned reductions in reimbursement percentages)*
- Breakdown of annual fund distributions as follows:

<u>Calendar Year</u>	<u>Total State Costs*</u>	<u>Total Local Reimbursements**</u>
2020	\$13,210,486	\$31,208,373
2021	\$11,795,105	\$31,908,866
2022	\$8,738,394	\$32,609,622
2023	\$8,748,810	\$31,017,356
2024	\$8,759,434	\$31,674,748

*(breakdown of annual fund distributions continued)*

<u>Calendar Year</u>	<u>Total State Costs*</u>	<u>Total Local Reimbursements**</u>
2025	\$8,770,271	\$32,693,901
2026	\$7,281,324	\$32,214,741
2027	\$7,292,599	\$32,956,153
2028	\$7,304,099	\$33,697,797
2029	\$7,315,829	\$34,439,668

\*Total State Costs include NG9-1-1 costs and program administration (2% allocation)

\*\*Total Local Reimbursements include quarterly distributions and cost reimbursements to PSAPs (*note: despite reductions to the cost reimbursement percentage in 2023 and 2026, the total amount of cost reimbursements in 2029 are approximately the same as in 2020 due to the forecasted annual growth rate*)

To demonstrate the cost benefit of a statewide implementation compared to a regional approach, the illustration on Chart #2 forecasts the fund balance over the next ten years if the local jurisdictions implemented NG9-1-1 utilizing a regional deployment method. With this approach, both non-recurring and recurring costs for NG9-1-1 would increase significantly as indicated below:

- Adjusted fee represents a potential fee increase to **\$0.66** beginning January 2022
- Reduction of the cost reimbursement percentage from 80% to 70% in 2023
- Second reduction of the cost reimbursement percentage to **60%** in **2027**
- Projected non-recurring costs for NG9-1-1 of **\$12 million** in 2020
- Projected annual recurring costs for NG9-1-1 of **\$9 million** beginning in 2021

Chart #3 provides a cost comparison between a statewide and a regional implementation for the NG9-1-1. The total distributions include implementation costs as well as existing operating costs not related to the NG9-1-1 transition.

**Chart #1 – Statewide Implementation and Deployment**

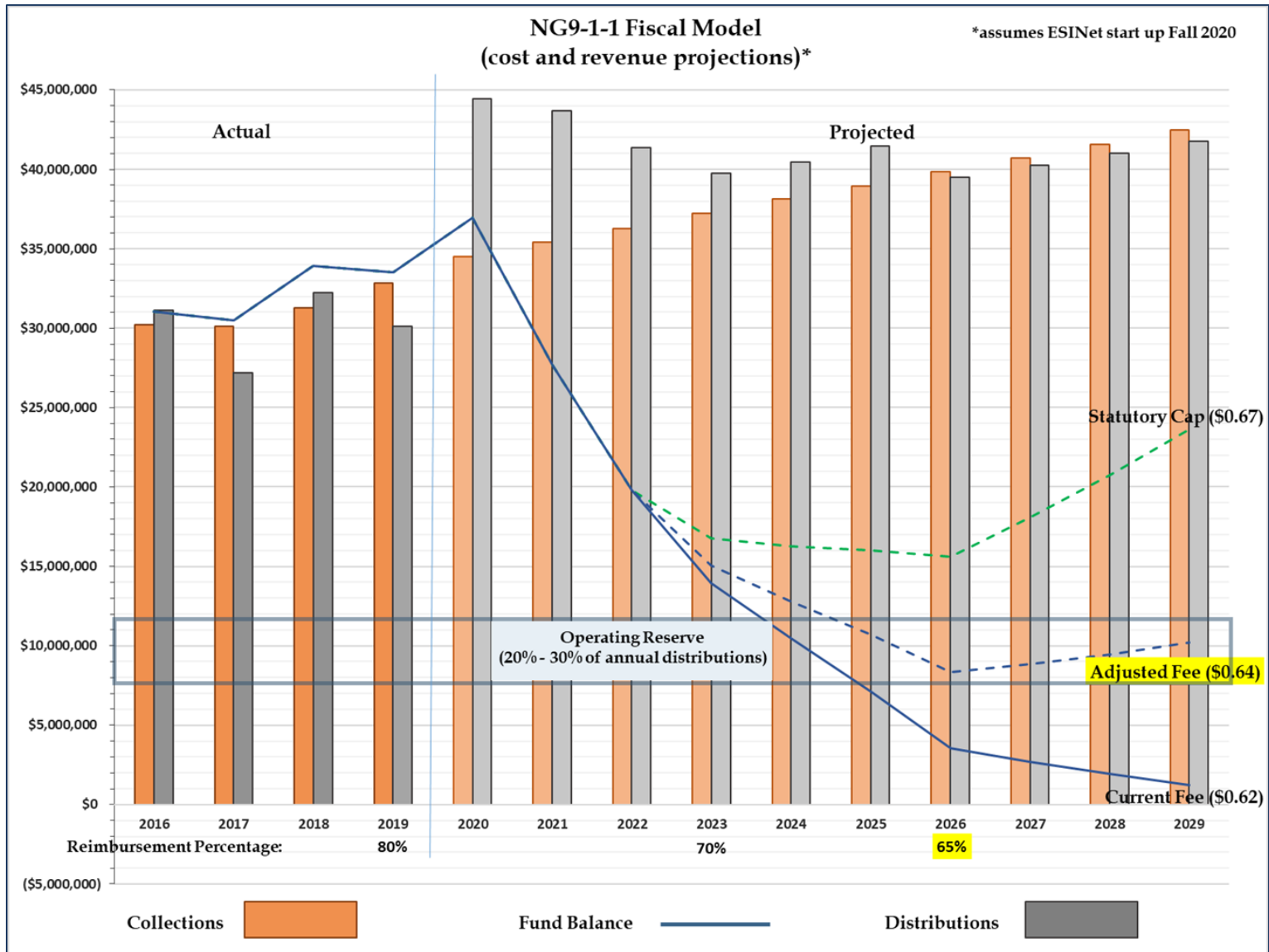
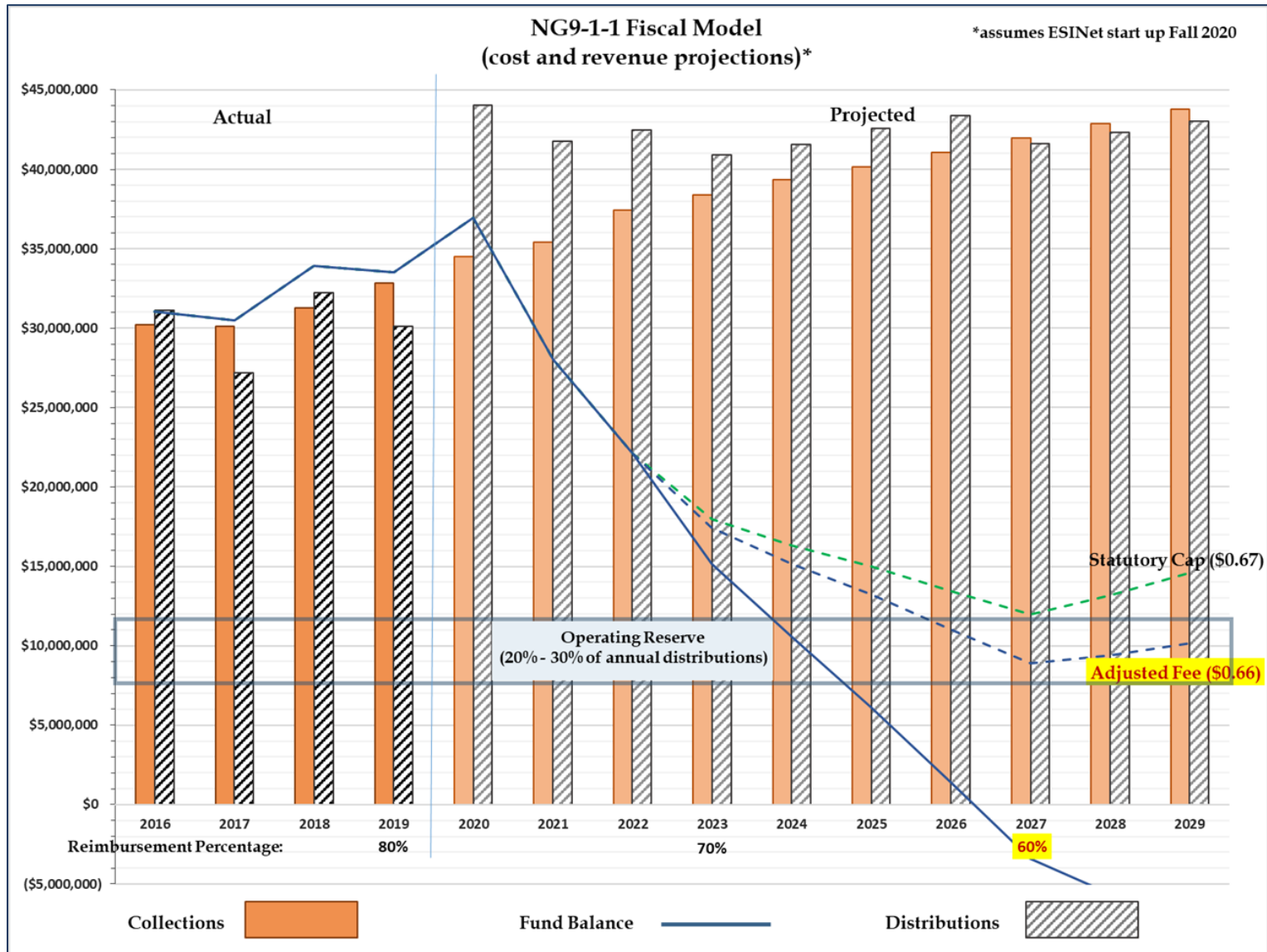
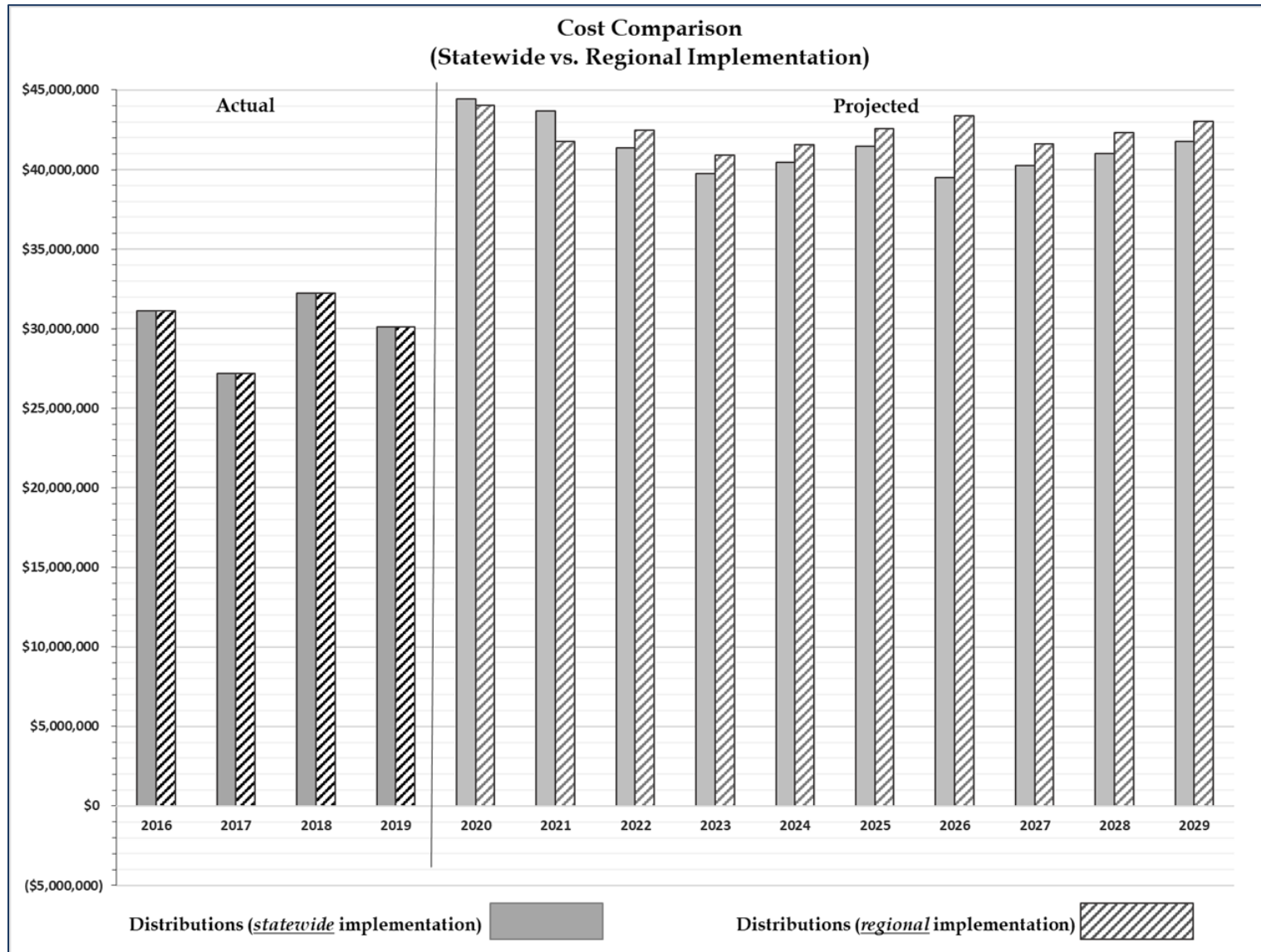


Chart #2 – Regional (Local) Implementation and Deployment



**Chart #3 – Cost Comparison of Statewide vs. Regional Implementation**





## Other Potential Impacts

**Fiscal Model Variations.** The NG9-1-1 Fiscal Model, as illustrated on Chart #1, reflects an anticipated adjustment to the monthly wireless 9-1-1 fee from \$0.62 to \$0.64 (per month per device) in 2022. Should current forecast trends for costs and revenues continue, this adjustment may be necessary to ensure sufficient funding and adequate reserves over the next ten years while minimizing the fiscal impact on local jurisdictions as well as the citizens of South Carolina. In addition to a potential fee adjustment, the cost reimbursement percentage to the local PSAPs would likely reduce from 70% to 65% in 2026 to sustain the wireless fund's solvency. However, the impact to the local jurisdictions of this percentage reduction should be offset by costs transferred from PSAPs to the State with the new system. Consequently, the new system should not impose any additional costs to the locals.

Numerous alternate models, as illustrated in the following charts, were analyzed to determine the optimal levels for the wireless fee and cost reimbursement percentages. Each of these scenarios incorporates the following assumptions from the original model:

- Projected revenue from federal grant of \$2.33 million between 2020 and 2021
- Reduction of the cost reimbursement percentage from 80% to 70% in 2023
- Targeted range for operating reserve (minimum fund balance) of 20%-30% of total annual distributions (approximately \$8-\$12 million)
- Average annual growth rate of total collections at 2.28% (*with the exception of the Scenario 5*)
- Average annual growth rate of total cost reimbursements at 2.64% (*prior to planned reductions in reimbursement percentages*)
- Projected non-recurring costs for NG9-1-1 of \$9.26 million in 2020
- Projected non-recurring costs for NG9-1-1 of \$3.07 million in 2021
- Projected annual recurring costs for NG9-1-1 of \$2.40 million in 2020
- Projected annual recurring costs for NG9-1-1 of \$7.81 million beginning in 2021
- Projected annual recurring costs for NG9-1-1 of \$6.31 million beginning in 2026

Each of the five alternate scenarios will vary as indicated below:

**Chart #4:** reduction of the cost reimbursement percentage from 70% to 65% in 2026 with an adjusted fee of \$0.63 beginning January 2022

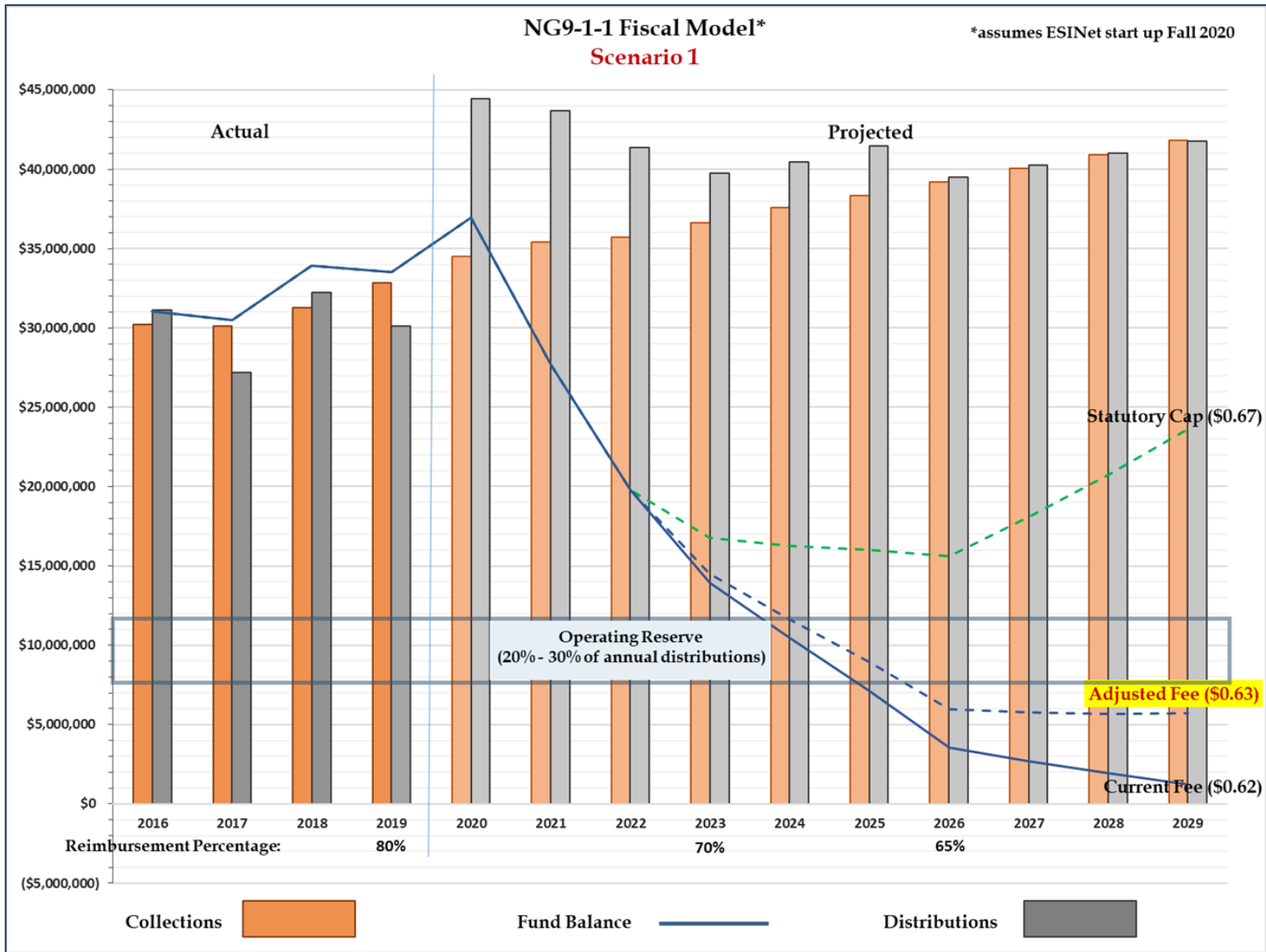
**Chart #5:** reduction of the cost reimbursement percentage from 70% to 65% in 2026 with an adjusted fee of \$0.65 beginning January 2022

**Chart #6:** reduction of the cost reimbursement percentage from 70% to 60% in 2027 with and adjusted fee of \$0.64 beginning January 2022

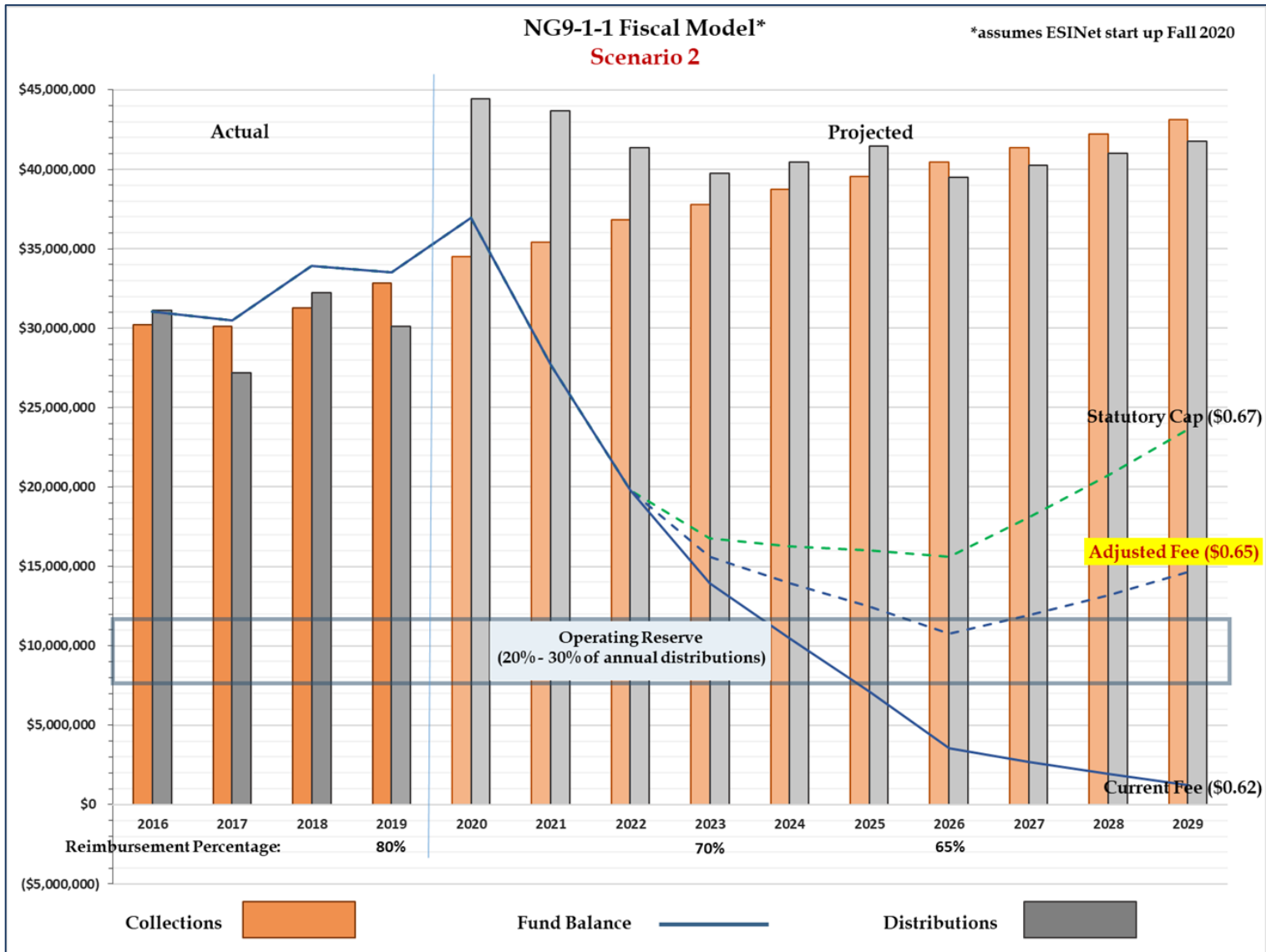
**Chart #7:** maintain the cost reimbursement percentage at 70% through 2029 with an adjusted fee of \$0.64 beginning January 2022 and a second fee adjustment to \$0.65 beginning January 2026

**Chart #8:** reduces the projected average annual growth rate of total collections by 50% with an adjusted fee of \$0.66 in January 2022 and a second fee adjustment to \$0.67 in January 2025

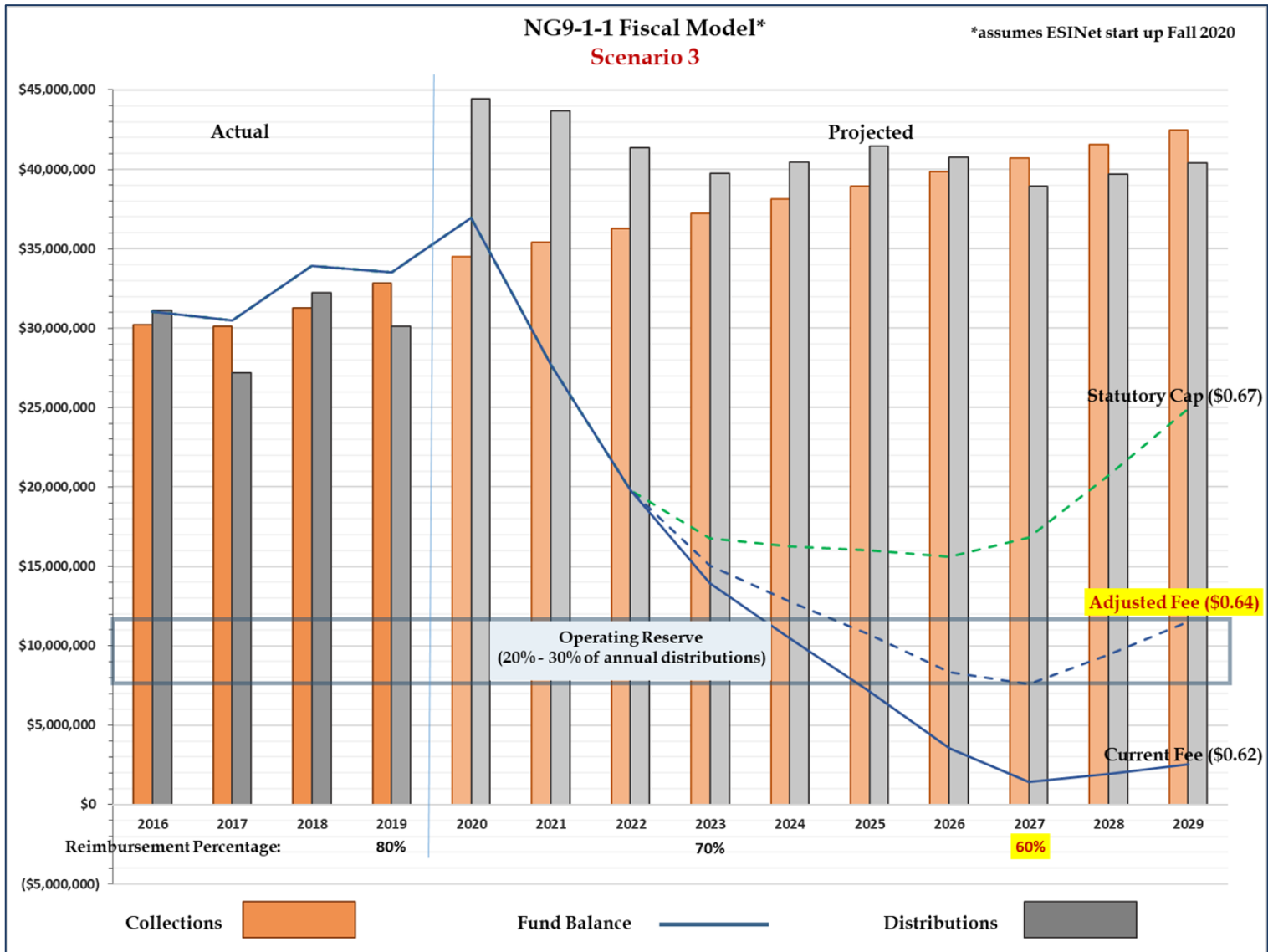
**Chart #4 – Cost Reimbursement @ 65% in 2026; Adjusted Fee @ \$0.63 in 2022**



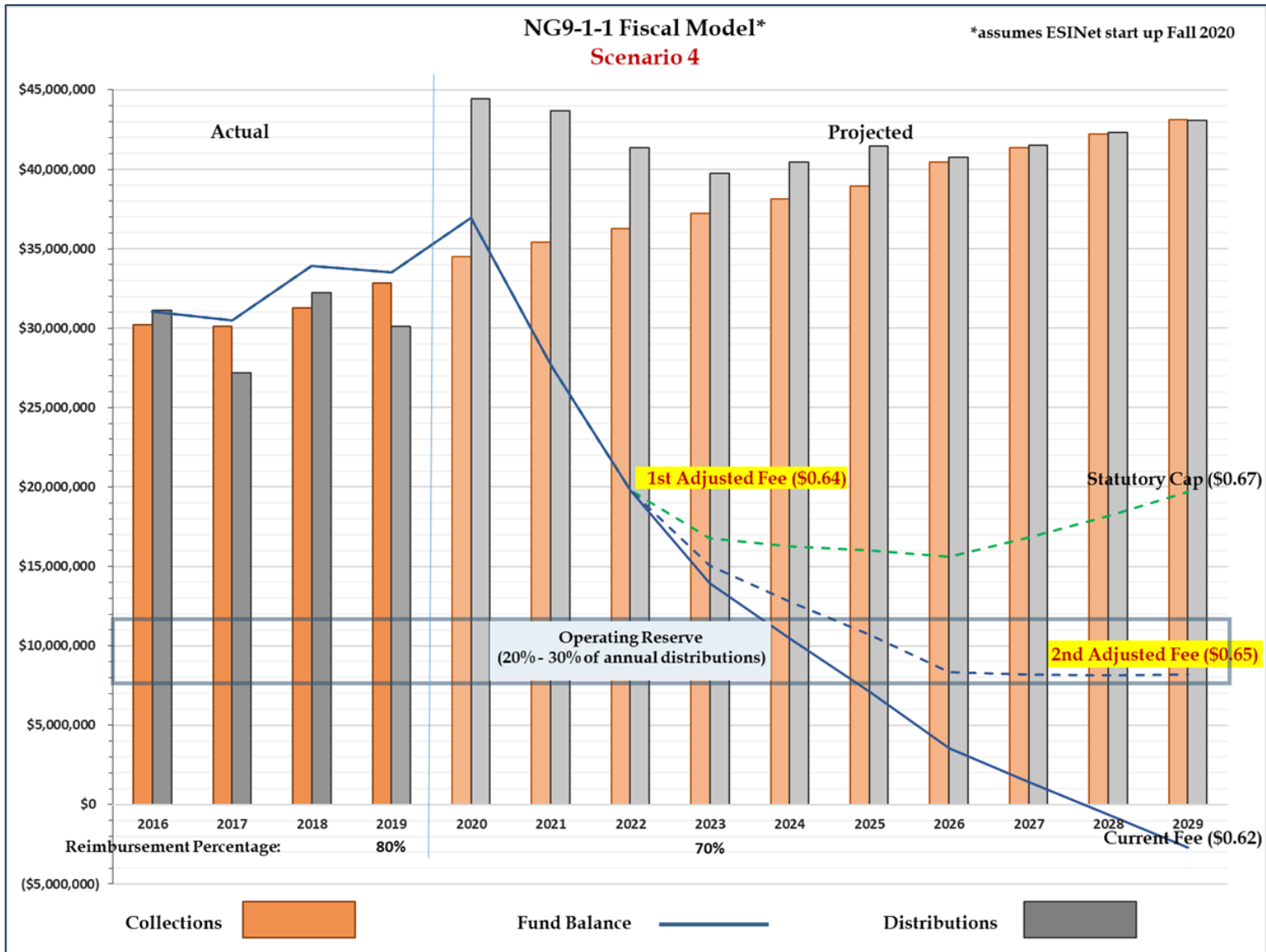
**Chart #5 – Cost Reimbursement @ 65% in 2026; Adjusted Fee @ \$0.65 in 2022**



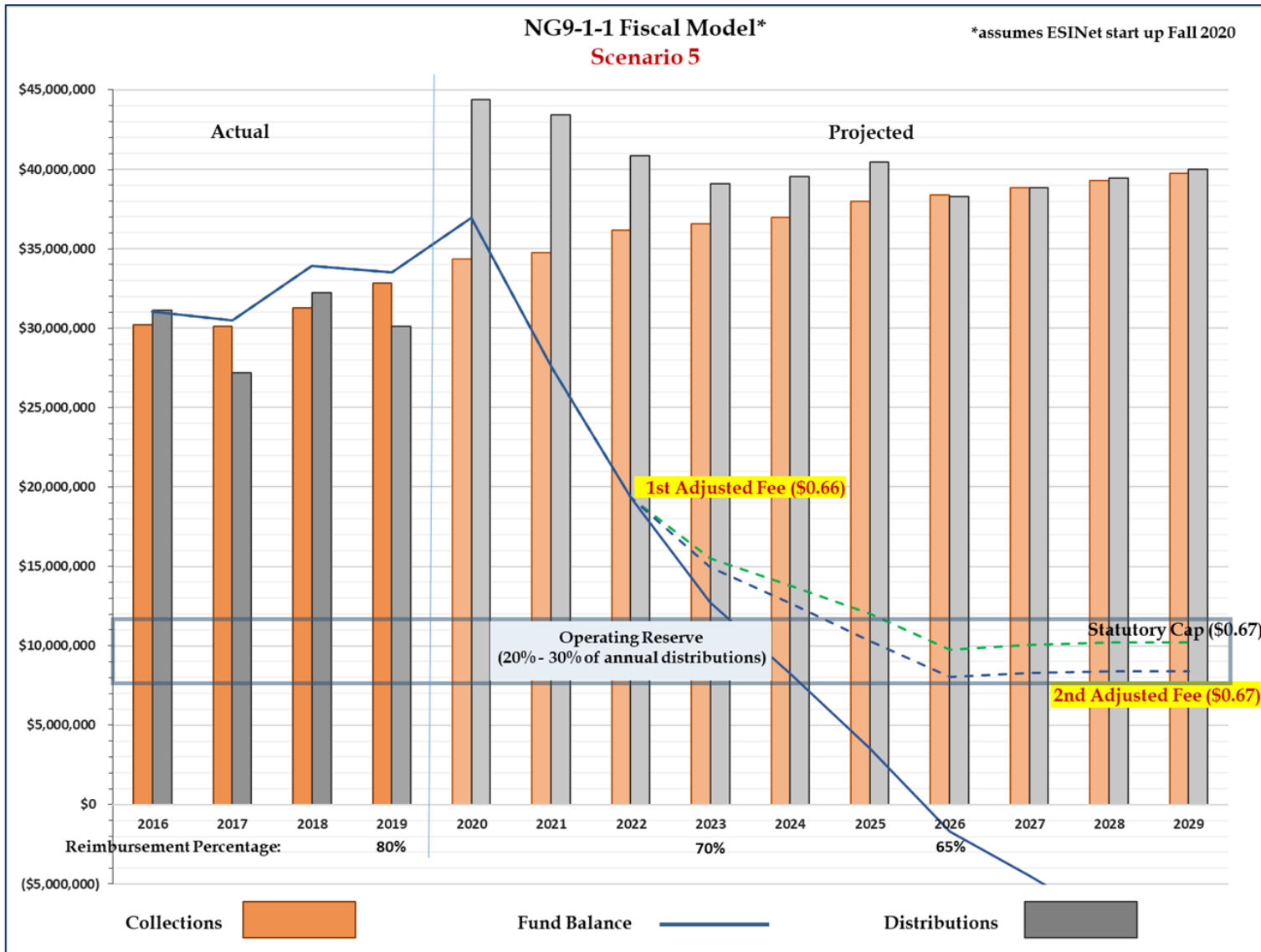
**Chart #6 – Cost Reimbursement @ 60% in 2027; Adjusted Fee @ \$0.64 in 2022**



**Chart #7 – Cost Reimbursement Remains @ 70%; Adjusted Fee @ \$0.64 in 2022 and \$0.65 in 2026**



**Chart #8 – Projected Revenue Growth Reduced by 50%; Adjusted Fee @ \$0.66 in 2022 and \$0.67 in 2025**



## Other Considerations

**Cost Reimbursement Percentage.** The NG9-1-1 Fiscal Model anticipates future reductions in the percentage of costs incurred by local jurisdictions reimbursed through the wireless 9-1-1 fund. However, as PSAPs join the statewide system, some of the costs currently incurred by PSAPs for communications service fees will transfer to the State, paid directly from the fund. The model attempts to delay any percentage reductions until at least 2023 to minimize the overall fiscal impact to local jurisdictions through these cost offsets. As with the wireless 9-1-1 fee, the SC 9-1-1 Advisory Committee (Committee) and the RFA Board (Board) will evaluate any recommendations for changes to the cost reimbursement percentage on an annual basis using the most current information provided by RFA.

**Wireless 9-1-1 Fee.** RFA continues to update and adjust the NG9-1-1 Fiscal Model as forecasts change and the most current fund activity is incorporated. Each year, both the Committee and the Board evaluate the model's projections to ensure adequate resources are available for implementing the strategic plan. These resources are funded through the wireless 9-1-1 fee, a monthly charge applied to each wireless communications device registered to a South Carolina primary address. Currently, this fee is set at \$0.62 per month per device and cannot exceed the statutory cap calculated from the average monthly landline charges paid in South Carolina. At present, this calculation results in a cap of \$0.67.

In considering any potential adjustments to either the wireless 9-1-1 fee or the cost reimbursement percentage, the Committee and the Board balance these resource needs with the goal of minimizing the fiscal impact on both local jurisdictions and the citizens of South Carolina. Based on all available information at this time, the current wireless fee of \$0.62 does not appear to be sufficient to fulfill all strategic plan objectives for the next ten years. An adjustment within the statutory cap may be necessary at some point in the future, and the Committee and the Board will evaluate the status in November of each year. RFA will continue to monitor actual revenues and expenditures incurred as well as changing conditions affecting forecasts to support this evaluation process.

**Inflation.** The chart on the following page provides a 20-year historical trend of the statutory cap, the actual wireless monthly fee, and a representation of the fee if adjusted for inflation. As illustrated in the chart, the monthly wireless fee was \$0.62 in 2009 and, despite some minor fluctuation between 2010 and 2012, has remained at that level for the past five years even though the costs of equipment and service charges for providing emergency response services has continued to increase. If adjusted for inflation over the past twenty years, the monthly fee would have risen to \$0.70 by 2009 and eventually reached \$0.83 by 2018. The national average fee (limited data available) increased from \$0.92 in 2016 to \$0.99 in 2018.

**Conclusion.** At this time, RFA does not anticipate the need for future legislation related to 9-1-1 services. The current statutes governing the state wireless 9-1-1 program are sufficient to accommodate the strategic plan's initiatives for transitioning to NG9-1-1. RFA will continue to monitor the wireless 9-1-1 fund and provide the most current fiscal model to the Advisory Committee and RFA Board in the fall of 2020 and annually thereafter along with any potential recommendations for fee adjustments in the following calendar year.



Chart #9 – 20-Year Historical Trend of the Wireless Fee

