

**The Commonwealth of Virginia**



**Cost Benefit and Opportunity Cost  
Analysis Guidelines**

**For the**

**Public-Private Education Facilities and Infrastructure  
Act of 2002**

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# 1 INTRODUCTION

The Cost Benefit and Opportunity Cost Analysis Guidelines (Guidelines) is a companion document to the Public-Private Education Facilities and Infrastructure Implementation Manual and Guidelines (PPEA Manual and Guidelines) and used by the Virginia Office of Public-Private Partnerships (VAP3). The Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA) (§56.575.1 - §56.575.18 of the Code of Virginia) requires the PPEA Manual and Guidelines to include analysis procedures, such as a Cost Benefit Analysis (CBA) and an Opportunity Cost Analysis (OCA) for all Qualified Projects being procured for agencies and institutions of the Commonwealth of Virginia.

PPEA Qualified Projects vary in scope, size and complexity; therefore, each Qualified Project's CBA and OCA may be scaled to reflect specific project characteristics. The CBA and OCA intended use is to compare the expected costs and benefits after the RPE has determined the Qualifying Project's prioritization and delivery method. The RPE will make the determination whether to pursue the project. Thus the CBA and OCA are not used to analyze various delivery methods, prioritize investment opportunities or projects, or evaluate different scope options.

The purpose of these Guidelines is to define consistent and efficient processes for the development of all CBA's and OCA's completed by the VAP3, in coordination with the applicable Responsible Public Entity (RPE), for PPEA Qualified Projects. These Guidelines outline roles and specific guidance for completing a CBA and OCA. The findings from the CBA and OCA are documented in individual reports.

This document is organized into sections and each section concludes with a summary of key actions. All capitalized terms are defined in Appendix A.

## 2 COST BENEFIT ANALYSIS GUIDELINE OBJECTIVES

To ensure CBA's for all Qualified Projects are developed and procured in compliance with the PPEA Manual and Guidelines and use a consistent approach, the Guidelines establish the following objectives:

- Create a consistent approach to what costs should be considered;
- Create a consistent approach to what benefits should be considered;
- Create a consistent approach to what ratios should be calculated (benefits vs. costs); and
- Create a consistent approach to what information should be included in the CBA report.

## 3 COST BENEFIT ANALYSIS

### 3.1 WHAT IS A COST BENEFIT ANALYSIS?

A CBA is an evaluation tool comparing the Total Benefits to the Total Project Cost of a Qualified Project over a predetermined Comprehensive Agreement term. The evaluation provides information to the RPE on whether the benefits of a project outweigh the costs and whether advancing the Qualified Project to

procurement brings Value to the RPE. A CBA defines the following three (3) ratio for determining the Value of the project, which are explained further in Section 3.5:

- Hard Benefits to Net Total Project Cost;
- Soft Benefits to Net Total Project Cost; and
- Total Benefits to Net Total Project Cost.

All Values should be calculated in year of expenditure or earned dollars (Nominal Values), which reflect what costs, revenues and benefits are expected to be realized in each year of the term of the Comprehensive Agreement. These amounts include costs, revenues and benefits. Using Net Present Value (NPV) can add bias to the Nominal Value based on the discount rate assumed. The NPV amount should not be used in budgeting future costs or expected benefits.

Additionally, the Qualified Project's CBA will be used for a comparison with the Opportunity Cost Analysis (Next Best Alternative), which is explained further in Section 5. Nominal Values should be used because the term of the Qualified Project may not equal the term of the Next Best Alternative. If the term of the Qualified Project and Next Best Alternative are different, then NPV can distort the Nominal Values by discounting the longer term project. Due to these reasons, a Nominal Value is recommended to be used in the CBA.

### **3.2 ASSUMPTIONS**

Before developing the costs, revenues or benefits of a Qualifying Project, all project specific Assumptions must be documented. These Assumptions are later listed in the final CBA report. Assumptions should be: reasonable and acceptable to the RPE; based on the available information at the time of the development of the CBA; and discussed with the RPE prior to starting development of a CBA.

If other analyses (e.g., feasibility study, risk register, value for money, etc.) are developed for the Qualified Project either before or after completion of the CBA, then the Assumptions used in the CBA should be consistent with all project analyses. One set of Assumptions must not be used for the CBA and a different set of Assumptions used in another analysis. An exception should be made; however, if a previous assumption was found to be incorrect or is no longer acceptable. This may warrant updating the previous analysis.

Assumptions should be organized into categories for ease of identification and cost valuation. Some category groupings and types of Assumptions could be as follows:

- Scope
  - what square footage, land requirements, building height, etc. are needed?
  - what furniture will be purchased? (e.g., new or from current inventory)
  - if items are excluded from the project scope, then what impact will this have on the Qualified Project?
- Risk
  - what risks are being transferred to the private sector entity?
  - what risks are being retained by the RPE?
  - what risks are being shared by the private sector entity or RPE?

- Construction or Capital Costs
  - what is the escalation rate during construction?
  - is project construction phased?
  - what standards, including Federal, Commonwealth of Virginia or industry does the project need to meet?
  - do construction factors (e.g., historical considerations and environmental) complicate the project?
- Financial
  - what term will be used for the Qualified Project, including both the construction and operation term?
  - what P3 financial structure (e.g., Availability Payment and Public or Private financing) will be used?
  - what time frame will it take to secure sources of funding?
- Operations and Maintenance
  - what is the escalation rate during operations and maintenance?
  - what performance standards will be required?
  - will the RPE retain any maintenance functions (i.e., routine or capital)?
  - will the RPE retain any operations functions?
  - if operations or maintenance functions are retained by the RPE, then how does this impact the project?
- Revenue
  - will there be revenue generation by the project?
  - is revenue risk being transferred, retained or shared?
- Benefits
  - what efficiencies will be realized?
  - what economic benefits will be realized?
  - will any current costs be reduced (e.g., electrical, copying, office supplies, etc.)?

These categories and assumption types above are for guidance. The ones used in the CBA may differ from the above with more or less categories depending on the specific project characteristics.

**Key action:**

Project Activity	Responsibility
Develop and define Assumptions consistent with other analysis for the Qualified Project (Must be current)	VAP3/RPE

### 3.3 IDENTIFICATION OF COSTS

The development of the Total Project Cost is based upon the documented Assumptions and the information available at the time the cost estimate is developed. The cost estimate for the CBA should

be consistent with any other cost estimate developed for the Qualified Project (e.g., feasibility study, value for money, etc.). However, an exception should be made if the previous cost information was found to be incorrect or is no longer acceptable. This may warrant updating the previous analysis.

Examples of the components for development of the cost estimate are as follows:

- procurement cost
- financing cost (if applicable)
- oversight and administration costs
- design engineering costs
- environmental costs (e.g., NEPA and costs associated with any surveys and efforts to avoid, minimize, and mitigate effects on protected resources)
- construction costs (e.g., mobilization, utility relocation, right-of-way, contract and overhead)
- operating costs
- maintenance costs, including both routine and capital
- transferable risk premiums, which are the increased cost due to transferring risks

The cost estimate components may differ from the above depending on the project characteristics. If a cost estimate has already been developed, then the developed cost estimate can be used for the CBA as long as it is still accurate at the time the CBA is developed.

In the early stages of Total Project Cost estimate development, many individual cost components may contain high level Assumptions. Therefore, Total Project Costs in the early stages of development may be better represented as a range of costs, which would cause the CBA ratios to also be shown in a range. If the Qualified Project enters procurement, then the final Total Project Cost will be determined based upon information in the selected proposal.

**Key action:**

Project Activity	Responsibility
Develop Total Project Cost estimate based on scope, term and Assumptions (Must be current)	VAP3/RPE

### 3.4 IDENTIFICATION OF REVENUE

Qualified Projects may have the opportunity to generate revenue. The two types of revenue generation are recurring (on-going) and non-recurring (one-time). Both types of revenue generation should be documented in the CBA. The calculation of revenue generation must match the term of Comprehensive Agreement. Revenue generated after the Comprehensive Agreement term is not included in the CBA as this will skew the results and will not provide a clear picture of the revenue generation capabilities during the term of the Comprehensive Agreement.

Some examples of potential revenue generation are as follows:

- lease payments from other entities (recurring)

- one-time lease payments from other entities (non-recurring)
- naming rights/sponsorships (recurring/non-recurring)
- user fees (recurring/non-recurring)
- one time concession fee (non-recurring)

The following details should be included in the report:

- source of the revenue
- how the revenue will be generated
- term of the revenue generation
- expected revenue over the term of the Comprehensive Agreement
- any excess revenue over the cost of construction, operations and maintenance, debt repayment and other required obligations
- how the excess revenue (if available) is to be allocated or used under the Comprehensive Agreement

**Key action:**

Project Activity	Responsibility
Identify and document any revenue generation opportunities and include with project Assumptions	VAP3/RPE

### 3.5 IDENTIFICATION OF BENEFITS

Identification of the benefits for a Qualified Project is a key component of a CBA. Benefits are categorized into two types: Hard Benefits (tangible) and Soft Benefits (intangible). Both types of benefits are evaluated in a CBA in order to calculate the Return on Investment Ratios (ROIR) described in Section 3.6. A dollar Value must be assigned to each identified benefit for the term of the Comprehensive Agreement.

- **Hard Benefits** - These benefits are independent, fact-based, easily measurable and easy to prove results of reduced cost or increased revenue at designated times throughout the term of the Comprehensive Agreement. Hard Benefits are the more important of the two types of benefits as they are readily measurable and the results are easily quantified and defensible, which makes them tangible. Some examples of Hard Benefits are as follows:
  - reduced unit cost of operations
  - reduced transaction cost
  - reduced overhead cost
  - reduced travel costs between work facilities
  - reduced manpower

For example, a project could reduce the power demands and consumption at a new location by installing more efficient equipment. The Hard Benefit would be the cost difference between the



present power consumption and the power consumption after project completion. The power consumption use is fact based and easily measurable (tangible).

- **Soft Benefits** – These benefits are primarily more qualitative than quantitative, difficult to define, and challenging to assess in terms of a dollar amount, which makes them intangible. These benefits are more complex and the underlying Assumptions are relatively easy to challenge. Therefore, these types of benefits must have clear documentation on how they were developed and the reason they are being included. Examples of Soft Benefits are as follows:
  - capacity enhancements avoidance
  - increased safety in the workplace
  - increased customer satisfaction
  - increased employee satisfaction (e.g., employee retention)
  - increased productivity
  - reduced absenteeism
  - enhanced regulatory compliance
  - increase economic development

For example, a project could reduce the need for hiring additional employees by increasing productivity of existing employees by 30%. The increased productivity Value would have to be calculated. The Assumptions used to reach this conclusion of Soft Benefits are not fact based and challenging to measure. Therefore, the Assumptions can be challenged as being overstated or understated, which is why the Assumptions need to be reasonable and well vetted.

**Key actions:**

Project Activity	Responsibility
Identify and develop Hard Benefits based on scope, term and Assumptions (Must be current)	VAP3/RPE
Identify and develop Soft Benefits based on scope, term and Assumptions (Must be current)	VAP3/RPE
Assign a dollar Value to all benefits documented	VAP3/RPE

### **3.6 RETURN ON INVESTMENT RATIOS**

After calculating the dollar Value of each benefit, three Return on Investment Ratios (ROIR) need to be calculated. Each ratio provides the RPE's decision-makers information about the Qualified Project's Value and helps clarify whether the Qualified Project should be advanced to the next step or not.

If revenue generation is an aspect of the Qualified Project and is planned to reduce any of the Total Project Cost, then, in most cases, it is deducted from the Total Project Cost in order to calculate a Net Total Project Cost for the Qualified Project. The Net Total Project Cost is used in the ROIR. If the Total

Project Cost is used instead of the Net Total Project Cost, then the ratios will be understated and benefits will look skewed. This could potentially cause a negative cost benefit outcome because the benefits do not recapture the Total Project Cost.

The three ratios calculated are as follows:

- **Hard Benefit-Cost Ratio**

The Hard Benefit-Cost Ratio compares the total Hard Benefits (tangible) to the Net Total Project Cost of the Qualified Project. This ratio allows the RPE's decision-makers to ascertain if the Value of the Hard Benefits recaptures the Net Total Project Cost of the Qualified Project. The Hard Benefit-Cost Ratio is expressed as the Hard Benefits divided by the Net Total Project Cost to the number one, which is shown as:

$$\frac{\text{Hard Benefits}}{\text{Net Total Cost}}: 1$$

For the Qualified Project, this ratio illustrates the dollar Value of Hard Benefits realized from every \$1 spent of Net Total Project Cost. For example, a ratio of 0.8 to 1 would recapture \$0.80 of Hard Benefits for every \$1 spent of Net Total Project Cost. This means the Qualified Project would recapture 80% of the Net Total Project Cost spent in Hard Benefits. Like the previous example, if Hard Benefits divided by Net Total Project Cost is less than the number one, then the Hard Benefits alone will not recapture all of the Net Total Project Cost. A Hard Benefit-Cost Ratio close to the number one or greater than the number one shows more Value in the Hard Benefits because they recapture more or all of the Net Total Project Cost. Therefore, a ratio close to or greater than the number one is a strong indicator the Qualified Project should be advanced to the next project step.

- **Soft Benefit-Cost Ratio**

The Soft Benefit-Cost Ratio compares the total Soft Benefits (intangible) to the Net Total Project Cost of the Qualified Project. This ratio allows the RPE's decision-makers to evaluate if the Value of the Soft Benefits recaptures the Net Total Project Cost of the Qualified Project. The Soft Benefit-Cost Ratio is expressed as the Soft Benefits divided by the Net Total Project Cost to the number one, which is shown as:

$$\frac{\text{Soft Benefits}}{\text{Net Total Cost}}: 1$$

For the Qualified Project, this ratio illustrates the dollar Value of Soft Benefits realized from every \$1 spent of Net Total Project Cost. For example, a ratio of 0.3 to 1 would recapture \$0.30 in Soft Benefits for every \$1 spent of Net Total Project Cost. This means the Qualified Project would recapture 30% of the Net Total Project Cost in Soft Benefits. Like the previous example, if Soft Benefits divided by Net Total Project Cost is less than the number one, then the Soft Benefits alone will not recapture all of the Net Total Project Cost. A low Soft Benefit-Cost Ratio means the Qualified Project's Soft Benefits have limited potential of recapturing the Net Total Project Cost. Since most Soft Benefits are heavily based on qualitative Assumptions, the Soft Benefit-Cost Ratio has a greater chance of being challenged as being overstated or understated.

- **Total Benefit-Cost Ratio**

The Total Benefit-Cost Ratio compares the Total Benefits, which is the sum of Hard and Soft Benefits, to the Net Total Project Cost of the Qualified Project. This ratio allows the RPE's decision-makers to evaluate a comprehensive view of how Total Benefits recapture the Net Total Project Cost spent for the Qualified Project. The Total Benefit-Cost Ratio is expressed as the Total Benefits divided by the Net Total Project Cost to one, which is shown as:

$$\frac{\text{Total Benefits}}{\text{Net Total Cost}} : 1$$

For the Qualified Project, this ratio illustrates the dollar Value of Total Benefits realized from every \$1 spent of Net Total Project Cost. For example, a ratio of 1.1 to 1 would recapture \$1.10 in Total Benefits for every \$1 spent of Net Total Project Cost, This means the Qualified Project would recapture 110% of the Net Total Project Cost spent in Total Benefits. On the other hand, a Total Benefit-Cost Ratio of 0.8 to 1 would mean the Total Benefits of the project would expect to recapture \$0.80 in Total Benefits for every \$1 spent of Net Total Project Cost, which means it would recapture 80% of the Net Total Project Cost spent in Total Benefits. Like the previous example, if Total Benefits divided by Net Total Project Cost is less than one, then the Total Benefits will not recapture all of the Net Total Project Cost spent. A Qualified Project with a Total Benefit-Cost Ratio less than one is usually not advanced since the Total Project Costs outweigh the Total Benefits.

**Key actions:**

Project Activity	Responsibility
Calculate Hard Benefits Ratio	VAP3
Calculate Soft Benefits Ratio	VAP3
Calculate Total Benefits Ratio	VAP3

### 3.7 BREAKEVEN POINT

To calculate the Breakeven Point each year's Total Benefits should be cumulatively added until the Total Benefits equal the Total Project Cost. The year the Total Benefits equal the Total Project Cost is the time (beginning of Comprehensive Agreement term to Breakeven Point year) it will take to reach the Breakeven Point. Caution should be used if the Total Benefits are spread evenly over the Comprehensive Agreement term as benefits received are rarely distributed equally over the Comprehensive Agreement term.

Since the Value of \$1 today is not equal to the Value of \$1 in the future, the identification of the year the Qualified Project reaches the Breakeven Point is beneficial to the RPE. This information allows the RPE to see if the benefits are front loaded, back loaded or at the midpoint of the term of the Comprehensive Agreement. An example of a front loaded Qualified Project is when the Breakeven Point of a 30 year

Comprehensive Agreement term is in year 10. This means the benefits equal the costs of the Qualified Project within the first third of the Comprehensive Agreement term. Whereas, a back loaded example is a Breakeven Point of 25 years on a 30 year Comprehensive Agreement term. This means the Qualified Project's benefits do not equal the costs until near the end of the Comprehensive Agreement term.

**Key action:**

Project Activity	Responsibility
Calculate the Breakeven Point	VAP3

### 3.8 UPDATED CBA

The CBA is not intended to be a onetime exercise. The initial CBA is completed during the screening and/or development phase of the Qualified Project. An updated CBA must be completed once an actual proposal has been selected and the Qualified Project is awarded. At this point, the Assumptions, costs, benefits and ROIR must be reviewed and updated to ensure decisions and Assumptions made previously are still valid.

If the project has a material scope change (i.e., financial structure, Assumption(s), cost estimate, revenue projection, size of project, etc.), then the CBA must be revised and updated to ensure the information is accurate.

## 4 OPPORTUNITY COST ANALYSIS OBJECTIVES

To ensure OCA's for all Qualified Projects developed and procured in compliance with the PPEA Manual and Guidelines are consistent, the following objectives are established for the Guidelines:

- Create a consistent approach in development of an OCA;
- Create a consistent approach to determine what opportunity costs should be considered in a OCA; and
- Create a consistent approach to determine what information should be included in the OCA report

## 5 OPPORTUNITY COST ANALYSIS

### 5.1 WHAT IS AN OPPORTUNITY COST ANALYSIS?

An OCA is an evaluation tool that compares the Qualified Project with the Next Best Alternative that was not chosen as the Qualified Project. In other words, the Next Best Alternative is the project that would have been chosen if the Qualified Project was not selected. By comparing the Qualified Project to the Next Best Alternative, the opportunity cost can be quantified. Thus, this evaluation provides information, demonstrating if the proposed Qualified Project is worthwhile in pursuing to the RPE. The

RPE will make the determination of the project to use for the Next Best Alternative for this comparison and provide Assumptions and other information needed for analyzing the Next Best Alternative. Fundamentally, an OCA is a comparison of the CBA for the Qualified Project to a CBA for the Next Best Alternative. To perform an OCA, the CBA guidance in Section 3 should be followed by substituting the Next Best Alternative for the Qualified Project.

Some examples of opportunity costs are as follows:

- opportunity to fund one project over another project
- opportunity to spend funds versus saving the funds
- opportunity to fund a healthcare facility versus a new computer system
- opportunity to fund a courthouse versus a prison
- opportunity to fund a new building versus a rehabilitation of an existing building

Nominal Values should be used because the terms of the Qualified Project may not equal the term of the Next Best Alternative. Nominal Values reflect what costs and benefits are expected to be realized or spent in the each year of the term of the Comprehensive Agreement. If the terms of the Comprehensive Agreement for the Qualified Project and Next Best Alternative are different, then using NPV for the costs, revenue and benefits can distort the dollar Values because the discount rate. Using NPV can add bias to the Nominal Value based on the discount rate used and this amount cannot be used in budgeting future costs or expected benefits. Due to these reasons, a Nominal Value is recommended to be used in the OCA.

**Key action:**

Project Activity	Responsibility
Develop an opportunity cost estimate based on scope, term and Assumptions	VAP3/RPE

## 6 REPORTS

### 6.1 COST BENEFIT ANALYSIS REPORT

The CBA report compiles all the information previously collected on the Qualified Project. The report places the information in a logical order for the RPE's decision-makers to review, helping them to understand the characteristics of the Qualified Project and come to a rational decision for the Qualified Project. In order for all the CBA reports to be consistent, the layout needs to follow the headings listed below:

1. Executive Summary – In short concise paragraphs summarize the report, including a justification and recommendation for the Qualified Project.
2. Background/Scope – Describe the objectives and scope of the Qualified Project.
3. Assumptions – Describe each Assumption and provide justification for its use.

4. Total Project Cost – Describe the cost estimate method used for this analysis, including the key factors, estimation approach and the process undertaken. Attach any backup data as an appendix.
5. Benefits – Describe: the benefits, categorizing them into Hard Benefits, Soft Benefits and Total Benefits; the reasoning behind the benefits; and the dollar amount calculated for each benefit over the term of the Comprehensive Agreement.
6. Ratios – Calculate the three ratios: Hard Benefits to Net Total Project Cost Ratio; Soft Benefits to Net Total Project Cost Ratio; and Total Benefits to Net Total Project Cost Ratio. Describe what each ratio means in relation to the Qualified Project.
7. Breakeven Point – Calculate the Breakeven Point and describe the time frame it will take to be reached and the date it will be realized.
8. Conclusion/Recommendation – Describe the conclusion of the Cost Benefit Analysis and make a recommendation to the RPE’s decision-makers about whether to move forward with the procurement of the Qualified Project.

## **6.2 OPPORTUNITY COST ANALYSIS REPORT**

The OCA report compiles all the information collected for the Next Best Alternative and places it in a logical order for the RPE’s decision-makers to review. The evaluation provides information to the decision-makers demonstrating if the proposed Qualified Project is worthwhile in pursuing and has inherent Value that is greater than the Next Best Alternative. In order for all the OCA reports to be consistent, the layout needs to follow the headings listed below:

1. Executive Summary – In short concise paragraphs summarize the report, including a justification and recommendation for the Next Best Alternative Qualified Project.
2. Background/Scope – Describe the Next Best Alternative to the Qualified Project chosen and how it was determined.
3. Assumptions – Describe each Assumption and provide justification for its use.
4. Total Project Cost – Describe the cost estimate used for the alternative project for this analysis, including the key factors, estimation approach and the process undertaken. Attach any backup data as an appendix.
5. Benefits – Describe: the benefits, categorizing then into Hard Benefits, Soft Benefits and Total Benefits; the reasoning behind the benefits; and the dollar amount calculated for each benefit over the term of the Next Best Alternative Qualified Project.

6. Ratios – Calculate the three ratios: Hard Benefits to Net Total Project Cost Ratio; Soft Benefits to Net Total Project Cost Ratio; and Total Benefits to Net Total Project Cost Ratio. Describe what each ratio means in relation to the Next Best Alternative Qualified Project.
7. Breakeven Point – Calculate the Breakeven Point and describe the time frame it will take to be reached and the date it will be realized.
8. Conclusion – Describe why the chosen Qualified Project is a superior selection over the opportunity of selecting Next Best Alternative Qualified Project.

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Appendix A – Cost Benefit and Opportunity Cost Analysis Definitions

Appendix B – Cost Benefit Analysis Report Template

Appendix C – Opportunity Cost Analysis Report Template



## APPENDIX A

### Cost Benefit and Opportunity Cost Analysis Guidelines Definitions

These definitions are applicable to the Cost-Benefit guidance documentation published by the Virginia Office of Public-Private Partnerships.

- **Availability Payment** – means a periodic payments in the form of milestone or service payments made by a public entity to a private entity in consideration of the design, build, financing, maintenance, and operations of an asset.
- **Assumptions** – means an act or condition presumed to be true, even without proof or hard evidence.
- **Breakeven Point** – means a point in time at which the benefits received equals the Total Project Costs of the Qualified Project.
- **Comprehensive Agreement** – means the contractual agreement between the Private Entity and the RPE, required by §56-575.9 of the Code of Virginia.
- **Cost Benefit Analysis** – means an evaluation tool comparing the estimated Total Benefits to the estimated Net Total Project Cost of a Qualified Project. This evaluation assists in the decision-making process for whether a Qualified Project is worth advancing to procurement.
- **Hard Benefits** – means the benefits of a Qualified Project with independent, fact based, easily measurable, and easy to prove results of reduced cost or increased revenue at designated times throughout the life of the project.
- **Hard Benefit-Cost Ratio** – means the Return on Investment received for the Hard Benefits of a Qualified Project. This is calculated by taking total Hard Benefits and dividing it by the Net Total Project Cost of the Qualified Project and is expressed as a ratio to the number one.
- **Net Total Project Cost** – means the Total Project Costs minus any revenue generation over the Comprehensive Agreement term of the Qualified Project.
- **Next Best Alternative** – means the action that would have been taken if the choice made was not taken.
- **Nominal Value** – means all revenues, benefits and costs accounted for in the year they are incurred (adjusting for inflation at an appropriate rate) over the Comprehensive Agreement term.
- **Net Present Value (NPV)** – means the calculation of all revenues, benefits and costs (adjusting for inflation at an appropriate rate) over the Comprehensive Agreement term and then discounting the totals at an appropriate discount rate back to a certain date (usually the beginning of the Comprehensive Agreement term unless documented otherwise).

- **Opportunity Cost Analysis** – means an evaluation tool that compares the Qualified Project with the Next Best Alternative. The Opportunity Cost Analysis is what action you would have taken if you didn't choose the Qualified Project. The evaluation provides information to decision-makers demonstrating if the proposed Qualified Project is worthwhile in pursuing and has inherent Value that is greater than the Next Best Alternative.
- **Private Entity** – means any natural person, corporation, general partnership, limited liability company, limited partnership, joint venture, business trust, public benefit corporation, non-profit entity, special purpose vehicle, or other business entity.
- **Public Contribution** – means the amount of funds committed to the project by the Responsible Public Entity or any other public body.
- **Qualified Project** – means (i) any education facility, including, but not limited to a school building, any functionally related and subordinate facility and land to a school building (including any stadium or other facility primarily used for school events), and any depreciable property provided for use in a school facility that is operated as part of the public school system or as an institution of higher education; (ii) any building or facility for principal use by any Public Entity; (iii) any improvements, together with equipment, necessary to enhance public safety and security of buildings to be principally used by a Public Entity; (iv) utility and telecommunications and other communications infrastructure; (v) a recreational facility; (vi) technology infrastructure, services, and applications, including, but not limited to, telecommunications, automated data processing, word processing and management information systems, and related information, equipment, goods and services; (vii) Any services designed to increase the productivity or efficiency of the RPE through the use of technology or other means; (viii) any technology, equipment, or infrastructure designed to deploy wireless broadband services to schools, businesses, or residential areas; (ix) any improvements necessary or desirable to any unimproved locally- or state-owned real estate; or (x) any solid waste management facility that produces electric energy derived from solid waste.
- **Responsible Public Entity (RPE)** – means the Commonwealth and any agency or authority thereof, any county, city, or town and any other political subdivision of the Commonwealth, any public body politic and corporate, or any regional entity that has the authority to develop and/or operate an applicable Qualified Project in accordance with the Public-Private Education Facilities and Infrastructure Act of 2002.
- **Return on Investment** – is a measure used to evaluate the Value of benefits received or derived from a certain Value of investment in a Qualified Project. A high return on investment means the investment compares favorably to the investment cost.
- **Return on Investment Ratios (ROIR)** – are the three calculated ratios (Hard Benefit-Cost Ratio, Soft Benefit-Cost Ratio and Total Benefit-Cost Ratio). A high ROIR means the investment compares favorably to the investment cost. As a performance measure, ROIR is used to evaluate the effectiveness of an investment or to compare the effectiveness of a number of different investments.

- **Soft Benefits** – means benefits which are difficult to define, have no positive confirmation and demonstrate more qualitative than quantitative Value. These benefits are more complex and the Assumptions they are based on are easy to challenge.
- **Soft Benefit-Cost Ratio** – means the Return on Investment received for the Soft Benefits of a Qualified Project. This is calculated by taking total Soft Benefits and dividing by the Net Total Project Cost of the Qualified Project and is expressed as a ratio to the number one.
- **Total Benefits** – means the total Hard Benefits plus the total Soft Benefits.
- **Total Benefit-Cost Ratio** – means the Return on Investment received for the Total Benefits of a Qualified Project. This is calculated by taking Total Benefits and dividing by the Net Total Project Cost of the Qualified Project and is expressed as a ratio to the number one.
- **Total Project Cost** – means the measurement of all costs associated with the project for the Comprehensive Agreement term of the project. These costs can include procurement, financing, risk adjustments costs, construction, routine, and full lifecycle maintenance costs.
- **Value** – means monetary or assigned worth of a good or service.

## APPENDIX B

Project Name

Initial or Final

### Cost Benefit Analysis Report

This report and recommendation is used by the Virginia Office of Public-Private Partnerships (VAP3) to document all information previously collected for the Cost Benefit Analysis on the Qualified Project. Upon completion of the Cost Benefit Analysis report, the VAP3 will submit this report to the RPE Administrator for review and consideration.

#### PROJECT INFORMATION

Date: Enter Date

Project Name: Project Name

Sponsoring RPE: Other (can also apply to other agencies)

#### EXECUTIVE SUMMARY – COST BENEFIT ANALYSIS

In short concise paragraphs summarize the report, including a justification and recommendation for the Qualified Project.

## BACKGROUND/SCOPE

Describe the objectives and scope of the Qualified Project.

## ASSUMPTIONS

Describe each assumption and provide justification for its use.

## PROJECT COST

Describe the cost estimate method used for this analysis, including the key factors, estimation approach and the process undertaken. Attach any backup data as an appendix.

## BENEFITS

Describe the benefits, categorizing them into Hard Benefits and Soft Benefits; the reasoning behind the benefits and the dollar amount calculated for each benefit over the term of the comprehensive agreement.

**Hard Benefits:**

**Soft Benefits:**

### RETURN ON INVESTMENT RATIOS

Calculate the three ratios: Hard Benefits to Net Total Project Cost Ratio; Soft Benefits to Net Total Project Cost Ratio; and Total Benefits to Net Total Project Cost Ratio. Describe what each ratio means in relation to the Qualified Project.

**Hard Benefit-Cost Ratio:**

**Soft Benefit-Cost Ratio:**

**Total Benefit-Cost Ratio:**

### BREAKEVEN POINT

Calculate the Breakeven Point and describe the time frame it will take to be reached and what year it will be realized.

### CONCLUSION AND RECOMMENDATION

Describe the conclusion of the Cost Benefit Analysis and make a recommendation to the RPE's decision-makers about whether to move forward with the procurement of the Qualified Project.

## LIST OF REFERENCES

### List References



**FIGURES**

Add figures if necessary

**APPENDIX**

Add appendix if necessary

## APPENDIX C

Project Name

### Opportunity Cost Analysis Report

This report and recommendation is used by the Virginia Office of Public-Private Partnerships (VAP3). The evaluation provides information to the RPE's decision makers demonstrating if the proposed Qualified Project is worthwhile in pursuing and has inherent Value that is greater than the Next Best Alternative. Upon completion of the Opportunity Cost Analysis report, the VAP3 will submit this report to the RPE Administrator for review and consideration.

#### ALTERNATIVE PROJECT INFORMATION

Date: [Click here to enter text.](#)

Alternative Project Name: Project Name

Sponsoring RPE: Other (can also apply to other agencies)

#### EXECUTIVE SUMMARY

In short concise paragraphs summarize the report, including a justification and recommendation for the Next Best Alternative Qualified Project.

## BACKGROUND/SCOPE

Describe the Next Best Alternative to the Qualified Project chosen and how it was determined.

## ASSUMPTIONS

Describe each assumption and provide justification for its use.

## PROJECT COST

Describe the cost estimate used for the alternative project for this report, including the key factors; estimation approach and the process undertaken. Attach any backup data as an appendix.

## BENEFITS

Describe the benefits, categorizing them into Hard Benefits and Soft Benefits, the reasoning behind the benefits and the dollar amount calculated for each benefit over the term of the comprehensive agreement.

**Hard Benefits:**

**Soft Benefits:**

### RETURN ON INVESTMENT RATIOS

Calculate the three ratios: Hard Benefits to Net Total Project Cost Ratio; Soft Benefits to Net Total Project Cost Ratio; and Total Benefits to Net Total Project Cost Ratio. Describe what each ratio means in relation to the Qualified Project.

**Hard Benefit-Cost Ratio:**

**Soft Benefit-Cost Ratio:**

**Total Benefit-Cost Ratio:**

### BREAKEVEN POINT

Calculate the Breakeven Point and describe the time frame it will take to be reached and what year it will be realized.

### CONCLUSION AND RECOMMENDATION

Describe why the chosen Qualified Project is a superior selection over the opportunity of selecting Next Best Alternative

## LIST OF REFERENCES

### List References

**FIGURES**

Add figures if necessary



**APPENDIX**

Add appendix if necessary