

# STATE OF RHODE ISLAND DEPARTMENT OF HUMAN SERVICES OFFICE OF CHILD SUPPORT SERVICES

## INRHODES CSE REPLACEMENT FEASIBILITY STUDY

## **COST-BENEFIT ANALYSIS REPORT**

Author(s):	Robert Pike, Darrell Gates
	SymbioSys Solutions, Inc.
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## **Revision History**

Rev.	DATE	SUMMARY OF CHANGES
1.0	12/18/2015	Initial Deliverable version
1.1	12/24/2015	Revised based on feedback from OCSS
1.2	01/28/2016	Final version for OCSS approval (after incorporating additional IES vendor costs provided by the State/Deloitte Consulting)



## **Agreements and Sign-off**

This document (version 1.2 of the Cost benefit Analysis Report) has been reviewed by the OCCS team and the undersigned signature represents OCSS' agreement with its contents.

Name	Signature / Date
For RI:	
•	Sharon Santilli, Associate Director DHS-OCSS
•	
•	
For Sym	bioSys
•	Darrell Gates, Project Manager
•	Arvind Ranade, Contract Manager



## **1** EXECUTIVE SUMMARY

### **1.1 BACKGROUND INFORMATION**

The key goal of the InRHODES CSE Feasibility Study & Alternatives Analysis Project is to recommend the most feasible and effective alternative that will provide continued high-quality automation support to Rhode Island's Child Support Enforcement Program.

The methodology followed in executing this project comprised of the following steps:



- Identify the business requirements, which must be met by the future InRHODES CSE replacement solution. A total of 1,359 business requirements were identified— 1,246 functional requirements, and 113 technical requirements
- 2. Perform a macro level analysis to select the three (3) most viable alternatives, including the status quo, which should be examined in greater detail
- For each of the three identified alternatives, perform a detailed Feasibility and Alternatives Analysis — i.e. Gap, SWOT and Risk Analyses; and develop time and effort estimates to bridge the identified gaps
- 4. Perform a detailed Cost-Benefit Analysis for each of the three alternatives
- 5. Develop weighted criteria to select an alternative, which best meets the objectives of *future InRHODES CSE replacement solution*, and provides the best value
- 6. Draft the Implementation Advanced Planning Document (IAPD) for the *future replacement InRHODES CSE solution*
- 7. Draft the RFP and Evaluation Criteria for the *future InRHODES CSE replacement solution*
- 8. Conduct project close-out activities



This Cost Benefit Analysis report presents the evaluation performed in Step 4. The two most viable alternatives that have been analyzed in detail are:

- a) Adapt NJKiDS: New Jersey's contemporary Child Support Enforcement System
- b) Custom Build: A new system built ground up to the exact specifications of the State

# Each alternative must be integrated with the DHS IES system which is scheduled for implementation in July 2016.

The report also provides an analysis of the costs for maintaining the existing InRHODES System (for Child Support Enforcement) going forward.



## **1.2 Key Background Information**

The goal of this Cost Benefit Analysis Report is to provide an analytical framework using financial metrics (costs and benefits), pertaining to the two alternatives under consideration, so they can be uniformly and objectively evaluated.

This Cost Benefit Analysis has been performed based on the guidelines set forth by the federal OCSE to aid the states and their contractors in conducting Cost-Benefit Analyses for Child Support Enforcement System replacement projects.

Benefits Analysis includes an in-depth analysis

#### Assumptions

- 12-year measurement period from FFY 2015 until FFY 2026
- FFY 2014 used as the base year for cost data.
- A present value factor of 7% will be applied to all benefits and costs.
- All CSE Replacement alternatives to fully realize all quantitative benefits once implemented.
- Efficiencies gained will be channeled towards increasing collections
- All required funding approvals (federal and state) will have been obtained, and RFP written, released, and evaluated and a vendor selected.
- The project team composition will be 90% contractor staff and 10% state staff
- Contractor to work at the State facilities

of both the Quantitative and Qualitative benefits that could be derived from any InRHODES CSE replacement alternative.

The first step was identifying activities through which specific benefits could be obtained. The next step was to capture metrics that would aid in quantifying the potential benefits identified.

The metrics used to quantify benefits were gathered in two ways: (1) by developing a questionnaire seeking metrics that could be used in determining quantitative benefits - this questionnaire sought information from both OCSS expert staff, and from the OCSS IT contractor Northrop Grumman; and (2) by developing an *Activity Reporting* sheet for conducting a mini time-study of OCSS staff activities.

OCSS staff were asked to complete these tally sheets for a period of five days. Once the information from the Activity Forms was compiled, follow-up interviews were conducted to ensure accuracy of the data from the mini time-study and the questionnaire. The information from the mini time-study and questionnaire were compared with information obtained during the Requirements Sessions.

As recommended by the federal OCSE, the magnitude of all of the quantitative benefits (except for direct cost savings) are measured based on how the benefit will translate into increased collections. The basic premise is that all resources freed by productivity gains will be redirected towards *'collection generating'* activities. Similarly, gains in the elapsed days taken to complete an activity are also translated, where applicable, into increased revenues that are realized because a case becomes a paying case that much earlier.

Historic cost data pertaining to the different aspects of keeping the InRHODES CSE system functioning was gathered by: (a) examinations of previous APDU's, and (b) discussions with OCSS and



DHS staff. Cost data pertaining to the future solution environment was estimated based on the infrastructure, and other environment costs, incurred by the DHS for its IES implementation.

## **1.3 QUANTITATIVE BENEFITS**

Three categories of quantitative benefits were identified. These were: (1) Productivity Gains; (2) Faster Throughput; and (3) Direct Cost Savings.

In order to realistically convert productivity gains into increased collection, two discount factors were applied to the computations: (A) as fragmented gains in FTEs cannot directly translate into a fully productive FTE a 60% reduction is taken; and (B) a diminishing returns factor, which takes into account the fact that each new FTE would not collect at the existing collection rates.

#### Quantitative Benefits Summary

- 12 *Productivity* gains benefits leading to 40.6 FTE gains
- 6 Faster Throughput gains
  - CI sped up by 3 days
  - Locate sped up by **12.7 days**
  - Establishment sped up by 30.2 days
  - Enforcement sped up by **5.9 days**
  - Interstate sped up by 0.5 days
  - $\circ$  ~ Interfaces sped up by **0.1 days**
- Direct Cost savings of \$162,351

## **1.4 QUALITATIVE BENEFITS**

Twelve qualitative benefits were identified and defined, each impacting one or more areas such as Program Accountability, Delivery of Services, Program Effectiveness, Performance Measure, Efficiency Gains, and System Maintainability.

With respect to each of these qualitative benefits, the evaluation considered the measure of effectiveness for each alternative.

### **1.5 SUMMARY OF EVALUATIONS**

The following metrics were used to evaluate the alternatives under consideration.

#### 1.5.1 Net Benefits

Indicates, during the CBA time horizon, the difference between the benefits that are expected to accrue, and the costs that are expected to be incurred. It is computed as the difference between the Present Value of Cumulative Benefits over the CBA time horizon, and the Present Value of Cumulative Costs over the CBA time horizon. This metric is computed based on the present value of the key cost and benefit data points.

#### 1.5.2 Benefit to Cost Ratio

Shows the profitability index of an alternative, because it represents the financial return for each dollar invested. It is computed as the proportion of the Present Value of Cumulative Benefits over the CBA time horizon and the Present Value of Cumulative Costs over the CBA time horizon.



#### 1.5.3 Breakeven Point

This is the point on the CBA time horizon when the cumulative investment in the project will be fully offset by the cumulative benefits that have accrued. Since the breakeven point is computed based on actual dollars expected to be spent, present value figures have not been used for this metric.

ALTERNATIVE	CBA METRIC	VALUE
Status Quo	Present Value of Cumulative Benefits	NA
	Present Value of Cumulative Costs	\$16,904,432
	Present Value of Net Benefits	NA
	Benefit to Cost Ratio	NA
	Breakeven Year	NA
	Effectiveness of Qualitative Benefits	NA
CUSTOM BUILD	Present Value of Cumulative Benefits	\$100,382,785
	Present Value of Cumulative Costs	\$59,184,801
	Present Value of Net Benefits	\$41,197,984
	Benefit to Cost Ratio	1.696
	Breakeven Year	FFY 2023
	Effectiveness of Qualitative Benefits	Highest
ADAPT NJKIDS	Present Value of Cumulative Benefits	\$100,382,785
	Present Value of Cumulative Costs	\$65,598,616
	Present Value of Net Benefits	\$34,784,169
	Benefit to Cost Ratio	1.530
	Breakeven Year	FFY 2023
	Effectiveness of Qualitative Benefits	High

The following table presents the key CBA Metrics for each alternative.



## **1.6 COMPARISON OF ALTERNATIVES**

The following chart and table provide a summary of the cost-benefit comparisons for the three *InRHODES CSE replacement alternatives*.



METRIC	STATUS QUO		ADAPT NJKIDS
Present Value of Cumulative Benefits	NA	\$100,382,785	\$100,382,785
Present Value of Cumulative Costs	\$16,904,432	\$59,184,801	\$65,598,616
Present Value of Net Benefits	NA	\$41,197,984	\$34,784,169
Benefit to Cost Ratio		1.696	1.530
Breakeven Year	NA	FFY 2023	FFY 2023



The noteworthy points about the CBA comparison are:

#### 1.6.1 Benefits

The present value benefits resulting from Custom *Build* and *Adapt NJKiDS* have the same dollar value of about \$100,382,785 million. This benefit amount is the cumulative benefits for FFY 2020 through FFY 2026. These benefits are equal because: (a) the analysis assumes that all alternatives would meet 100% of functional requirements articulated in the *Requirements Document*; and (b) the implementation schedules for both alternatives are almost identical - and therefore start realizing benefits at the same time.

#### 1.6.2 Costs

• *Custom Build* has the lowest present value costs of the 2 alternatives. The cumulative present value cost for this alternative is \$59,184,801as compared to \$65,598,616 for *Adapt NJKiDS*.

#### 1.6.3 Net Benefits

- Both alternatives have positive present value net benefits over the CBA time horizon.
- The net benefits derived from *Adapt NJKiDS* are \$90,867,964, and Custom *Build* is \$99,257,016.

#### 1.6.4 Benefits to Cost Ratio

• *Custom Build* results in the highest *Benefit to Cost* ratio of 1.696 versus 1.530 for *Adapt NJKiDS*. The *Benefit to Cost* ratio represents the dollar value of the return that can be expected on each dollar that is invested in respective alternative.

#### 1.6.5 Breakeven Year

- The breakeven point occurs when, during the CBA time horizon, the cumulative investment in the project will be fully offset by the cumulative benefits that have been accrued.
- The breakeven point is determined using **actual or current** value benefits instead of the present value of benefits.
- Both the Custom Build and Adapt NJKiDS alternatives break even in FFY 2023. The net benefits for Custom Build (\$20,272,251) are larger In FFY 2023 than for Adapt NJKiDS (\$11,776,438).

#### **1.6.6 Qualitative Benefits**

• Although both *InRHODES CSE replacement alternatives* will provide a number of qualitative benefits, the measure of effectiveness of these qualitative benefits is the highest with the Custom *Build* alternative.



## 1.7 CONCLUSION

The above findings suggest that:

- a) Given the age, approaching technology-obsolescence of InRHODES, and the planned full implementation of IES for DHS, any portion of the \$16,904,532 *Status Quo* cost (over the CBA time horizon) that can be avoided, and channeled into one of the *InRHODES CSE replacement alternatives*, will yield greater returns for OCSS.
- b) *Custom Build will* provide a higher Return on Investment, and while both *Adapt NJKiDS* and *Custom Build* have the same break-even point (FFY 2023), *Custom Build reaches the breakeven point sooner in FFY 2023.*

\*Based on the results of the Cost-Benefit Analysis the *Custom Build alternative is the better option for DHS- OCSS.* 



## 2 PREFACE

The key goal of InRHODES CSE Feasibility Study & Alternatives Analysis Project is to recommend the most feasible and effective alternative that will provide continued high quality automation support to Rhode Island's Child Support Enforcement Program.

Accordingly, as a first step, the Feasibility Study team developed a comprehensive set of business, technical, and operational requirements for the *future InRHODES CSE replacement solution*. These requirements were based on in-depth sessions with OCSS staff, reviews of existing documentation, and input from senior management.

After establishing the baseline of <u>what</u> is to be achieved, the study team looked at the available alternatives. The study team then narrowed this universe of options to a short list of viable alternatives, which ought to be further examined for compatibility with the DHS IES System.

The next step in the process was to perform a Feasibility & Alternatives Analysis on the most viable alternatives. This analysis provided a comparison of the two alternatives and the Status Quo in terms of functional and technical gaps, risks, and size of implementation effort.

This report presents the details of the Cost-Benefit Analysis that supplements the Feasibility & Alternatives Analysis Report.

### 2.1 CONTENT & PURPOSE OF THIS REPORT

This report identifies and quantifies: (i) the costs associated with each *future InRHODES CSE replacement system* alternative; (ii) The hard dollar benefits associated with each *InRhodes CSE replacement alternative*; and (iii) the benefits that will result from each *InRHODES CSE replacement alternative*.

It also computes financial metrics such as: (i) *Net Benefits* (in present value terms); (ii) *Benefits to Cost ratio* (ROI); and (iii) *Breakeven Year*.

The report includes a general description of the federal guidelines for the Cost-Benefit Analysis, and the approach adopted for this Cost-Benefit Analysis. It then describes and measures the quantitative benefits associated with the *InRHODES CSE replacement alternatives* during each year of the cost-benefit horizon. This is followed by a description of the qualitative benefits associated with each *InRHODES CSE replacement alternative*. Thereafter, a detailed cost-benefit analysis is performed for each *future InRHODES CSE replacement alternative*.

The detailed cost-benefit analysis for each *future InRHODES CSE replacement alternative* includes:

- Assumptions upon which the cost-benefit analysis is founded.
- Details of the costs associated with each alternative.



- Benefits to be realized by implementing the alternative. \*Note that benefits only apply to the *InRHODES CSE replacement alternatives*, and not to the Status Quo.
- Cost-benefit valuation of the alternative.

The report concludes with a comparison of alternatives.

The findings of this report, in conjunction with those of the *Feasibility & Alternatives Analysis Report*, will be used to build the *Feasibility Study Recommendations Report*.

## 2.2 SOURCE/REFERENCE DOCUMENTS

For this Cost-Benefit Analysis, the following documents were referred to by the study team, either as a guide or as a data source:

- 1. ACF/OCSE 'Feasibility, Alternatives, and Cost/Benefit Analysis Guide'.
- 2. ACF/OCSE 'Cost-Benefit Analysis Companion Guide 1, 2, and 3'
- 3. ACF/OCSE 'Guide for Software Estimation'
- 4. ACF/OCSE Action Transmittal AT-0603.
- 'Technical Strategic Planning & System Regulation Compliance' a Web-Talk conducted by National Child Support Enforcement Association (NCSEA) and OCSE on February 19, 2009.
- 6. Other published data on the web (websites of ACF, states, industry associations, vendors and other relevant sites).
- 7. Size and effort estimates from the Feasibility & Alternatives Analysis Report.



## 2.3 PARTICIPANTS

The project's Cost Benefit team are:

OCSS			
Sharon Santilli	Kevin Donnelly	Wendy Fobert	
EOHHS-DOIT			
George Bowen Jim Bowman Bob Childs		Bob Childs	
SymbioSys			
Robert Pike	Darrell Gates	Arvind Ranade	

### 2.4 ACKNOWLEDGEMENTS

This document reflects significant effort on the part of the Cost Benefit team.

The willing, enthusiastic and valuable contributions made by every one of these people makes this *Cost-Benefit Analysis* Report a true team effort.



## **3** GLOSSARY OF TERMS & ABBREVIATIONS

Table 3-1 below provides the Glossary of the terms and the abbreviations used in this Cost-Benefit Analysis Report.

TERM/ABBREVIATION	DEFINITION
ACF	Administration for Children and Families
AT	(ACF/OCSE ) Action Transmittal
AVR	Automated Voice Response; also known as IVR
СВА	Cost Benefit Analysis
CFR	Code of Federal Regulations
сосомо	Refers to University of Southern California 2000 Constructive Cost Model II (USC-COCOMOII.2000) software estimation tool
COTS	Commercial Off the Shelf software
CSE	Child Support Enforcement
CSENet	Child Support Enforcement Network
CSLN	Child Support Lien Network
CSWS	Child Support Web Site
Custom Build	A new system built ground up to the exact specifications of the State and fully leveraging the reusable assets of the State's new IES system (RI Bridges)
DL&I	Department of Labor and Industry
ERP	Enterprise Resource Planning software
ES	(Large and complex) Enterprise System
FCR	Federal Case Registry (FCR)
FFY	Federal Fiscal Year
FIDM	Financial Institution Data Match
FPLS	Federal Parent Locator Service
FPA	Function Point Analysis
FS	Feasibility Study
FTE	Full Time Equivalent



TERM/ABBREVIATION	DEFINITION
IRM	Information Resource Management
IV-D	Child Support Enforcement Program
IVR	Interactive Voice Response System
MA	Medicaid/ Medical Assistance
NCSEA	National Child Support Association
NJKIDS	New Jersey Kids Deserve Support
OCSE	Office of the Child Support Enforcement
OIM	Office of Income Maintenance
OLAP	On Line Analytical Processing
InRHODES	RI DPS Child Support Enforcement System
PSOC	Project Save Our Children
RQAC	Required Attachments
ROI	Return On Investment (Benefits/Cost Ratio)
SCDU	State Collection and Disbursement Unit
SEI	Software Engineering Institute
SOA	Service Oriented Architecture
SNAP	Supplemental Nutrition Assistance Program
SSA	Social Security Administration
STROP	State Tax Refund Offset Program
TANF	Temporary Assistance for Needy Families
TIPS	Treasury Inflation Protected Securities
UC	Unemployment Compensation
USC COCOMO II.2000.0	University of Southern California's Constructive Cost Model Software for Sizing and Estimation of Software Development Projects
WBS	Work Breakdown Structure

TABLE 3-1: GLOSSARY OF TERMS AND ABBREVIATIONS



## 4 COST BENEFIT ANALYSIS: APPROACH & ASSUMPTIONS

### 4.1 GENERAL COST-BENEFIT ANALYSIS INFORMATION

#### 4.1.1 Goals and objectives

The Cost-Benefit analysis is an analytical framework to evaluate the alternatives under consideration, so that an informed decision can be made about: (a) whether or not the alternative ought to be pursued; and (b) if an alternative is to be pursued, how it ought to be implemented.

#### 4.1.2 Constraints

Constraints are factors that lie outside of the project effort but may nevertheless have a direct impact on the alternatives. Constraints may belong to any or all of the following categories:

- Laws and regulations
- Technological
- Socio-political
- Operational
- Financial

#### 4.1.3 Quantitative Benefits

Any Cost-Benefit Analysis (CBA) attempts to measure the benefits derived from an investment, whether that investment is in a new computer system or changing business processes. Quantitative benefits are those benefits to which a specific dollar value can be assigned. These benefits could be in the form of direct costs savings, staff savings, or increased revenues.

#### 4.1.4 Qualitative Benefits

These benefits are typically more nebulous and are more difficult, if not impossible, to quantify in terms of dollar value. Though intangible, these benefits may provide significant value, and hence are still an important component of any CBA.

#### 4.1.5 Private Sector CBA versus Public Sector CBA

A CBA conducted for a private sector project typically attempts to determine the profit to be gained from the project. A CBA for a public sector project has a different focus. It is focused on determining the most cost-effective solution. Child Support Enforcement Programs are somewhat unique public sector programs in that they generate collections (revenue) that, in a sense, offset costs. Therefore, in addition to the socio-economic impact of providing better services for the children of the State, these benefits translate into direct dollar savings to the State in terms of Welfare and Medicaid costs.

Therefore, Cost-Benefit Analyses for Child Support Systems compute benefits primarily in terms of increased collections.



### 4.2 FEDERAL GUIDELINES

#### 4.2.1 Federal Guidelines and Resources

The Office of Child Support Enforcement within the U. S Department of Health and Human Services (USDHHS), Administration for Children and Families provides a suite of guidebooks designed to aid states and their contractors in conducting Cost-Benefit Analyses for Child Support Enforcement System replacement projects. Among the guidebooks are: *Feasibility, Alternatives, and Cost / Benefit Analysis Guide, and Cost-Benefit Analysis Companion Guide* 1, 2, and 3.

The *Feasibility, Alternatives, and Cost / Benefit Analysis Guide* is the definitive reference while the *Companion Guides* provides supplemental information. All of these documents were used in this analysis.

#### 4.2.2 Functional Model / Revenue Stream Model

The federal Office of Child Support Enforcement has developed two models for evaluating Child Support systems: the Functional Model and the Revenue Stream Model.

The Functional Model is an analytic framework that evaluates benefits by compiling them along the lines of the functional areas of the organization. This approach is particularly appealing to the management within the Child Support organization, because benefits are organized to be aligned with the functional areas of the organization. The RI study team has used the Functional Model for this CBA.

The Revenue Steam Model is a model that was developed by ACF to periodically measure the benefits of a new Child Support system once it has been implemented.

### 4.3 APPROACH ADOPTED FOR THIS COST-BENEFIT ANALYSIS

The RI Study team followed a collaborative process in conducting this Cost-Benefit Analysis. It comprised of gathering input from stakeholder groups, verifying and validating input gathered from different sources, and performing analyses based on these inputs.

The following subsections describe the specific tasks carried out during each step of the process.

#### 4.3.1 Federal Guidelines and Expectations

Prior to commencing the actual analysis, the RI study team thoroughly reviewed all of the guidebooks (mentioned in section 4.2.1 above), in order to gain a thorough understanding of the requirements of this CBA. The specific methodology adopted by the study team to perform this CBA was based on the recommendations and expectations articulated in these guidelines/guide books. The methodology was further refined based on prior experiences in conducting a Child Support Feasibility Study.

#### 4.3.2 Gather, Review and Project Workload

The next step was to gather, compile and analyze key historical data pertaining to workloads. The historical data was provided by OCSS staff and various federal reports for the Federal Fiscal Year (FFY)



2010 through FFY 2014. This data was analyzed to identify trends, as well as the factors that have impacted the workload, in the respective year(s).

The historical workload data, and the trend analysis results, form the basis for estimating the projected workloads for the time horizon considered in this CBA. These projected workloads have been used to estimate projected benefits for each year in the cost-benefit time horizon.

Details of the historic data, trend analysis, projected workloads, and the projected benefits estimates, are presented in Section 5 of this report.

#### 4.3.3 Determine Status Quo Costs and Projections

The cost data for FFY 2014 (last completed FFY prior to this study) has been taken as the baseline data for estimating the Status Quo cost projections over the CBA time horizon. The breakdown of these costs is based on the inputs provided by the OCSS Financial staff.

For some of the IT Costs, FY 2016 data was used. This was due to RI DHS employing a modified costs allocation formula due to the pending implementation of their Integrated Eligibility System (IES) in July 2016.

Please refer to Section 7 for more details.

# 4.3.4 Determine Infrastructure Costs and Projections for the InRHODES CSE replacement alternatives

Baseline infrastructure cost (hardware and software purchase, licensing and maintenance) data for the *InRHODES CSE replacement alternatives* have been derived based on the infrastructure costs for the current DHS IES implementation. Baseline costs and standard growth rates, where applicable, have been used to project these costs for each year in the CBA time horizon.

#### 4.3.5 Identify potential benefits

The *Requirements Document* and the subsequent InRHODES CSE Gap analysis made it possible to identify:

- 1. Functions that are either not handled well, or are not handled at all by InRHODES.
- 2. New functionalities as well as existing functions that could be improved upon, and handled more efficiently, through the use of the contemporary technologies and technology best practices that the *InRHODES CSE replacement solution* would offer.

The quantitative and qualitative benefits that could be realized with an appropriate *InRHODES CSE replacement solution* are cataloged in section 5 (Quantitative Benefits) and section 6 (Qualitative Benefits) of this report.

In addition to the benefits derived from functional improvements, moving InRHODES CSE to a more contemporary technology platform may result in cost savings in terms of hardware, software, and support costs.



#### 4.3.6 Compute the extent of potential quantitative benefits

Having identified the specific processes/activities where one or more benefits could be realized from an *InRHODES CSE replacement solution*, the next task was to obtain data regarding the time and effort that each of these processes/activities currently takes, and their frequency of occurrence. While the relevant data reported by the OCSS to the OCSE via its various federal reports is extensive, it is not detailed enough to quantify benefits. Therefore, certain additional workload metrics were also collected.

Although there are a number of approaches that could be employed to obtain this additional workload metrics data, many of them were too impractical, expensive, or intrusive to employ. In order to minimize these constraints, and still obtain representative and useful data, the study team decided to draw on the expertise and experience of the InRHODES CSE staff, and to conduct a mini time-study to obtain key metrics.

#### 4.3.7 Estimate implementation costs for each alternative

A Function Point Analysis (FPA) was carried out to determine the size of the effort associated with the implementation of each of the *InRHODES CSE replacement alternatives* being considered.

The results of the Function Point Analysis were then used as input for the University of Southern California 2000 Constructive Cost Model II (USC-COCOMOII.2000) software estimation tool, to arrive at the cost and schedule estimates for each of the alternatives. COCOMO is a well-recognized industry standard model for estimating the cost and schedule for software implementation projects.

In addition, the Expert Judgment method was also used as an alternative to gauge the size and effort for implementing each of the *InRHODES CSE replacement alternatives*.

The resultant estimates have been used in this Cost-Benefit Analysis to project the cost for each of the *InRHODES CSE replacement alternatives*.

Note: The estimates offered by the COCOMO II software have been used for: (a) the Custom *Build* alternative, and (b) the *Adapt NJKiDS* alternative.

All supporting documentation pertaining to these estimations (FPA, COCOMO-II and Expert Judgment) are available on the CD accompanying the *Feasibility Study* reports.

#### 4.3.8 Compile information to produce CBA report

The final step in the process was to compile all of the information obtained, and use it to project the specific costs to be incurred and the benefits to be accrued for each of the alternatives (including the status quo) for the time horizon considered in this CBA.

A set of 3 Excel spreadsheets (accompanying this report) contains the compiled data and associated computations for this comprehensive Cost-Benefit Analysis. These spreadsheets are:



- 1. *Cost-Benefit Analysis RI* spreadsheet, presenting summary Cost-Benefit data as well as details of the current and present values of projected costs and benefits associated with each alternative during each year of the Cost-Benefit horizon.
- Cost Analysis RI spreadsheet, presenting the current and present values of projected costs under different cost categories for each year of the Cost-Benefit horizon, for each alternative. It also includes worksheets that present the baseline data and growth factors used for the cost projections.
- 3. *Benefit Analysis RI* spreadsheet, presenting the current and present values of projected benefits under different benefit categories for each year of the Cost-Benefit horizon. It also includes worksheets that present the historic data, the projected data, and all of the assumptions on which the analysis is based.

This *Cost-Benefit Analysis Report* is based on the details contained in the above mentioned set of Cost-Benefit Analysis spreadsheets.

### 4.4 ASSUMPTIONS

Every Cost-Benefit Analysis is based on certain assumptions. Listed below are some of the key assumptions on which this CBA is based:

- The measuring period for this analysis will be the 12-year period from FFY 2015 through FFY 2026.
- The base year for cost data is FFY 2014
- A present value factor of 7% will be applied to all benefits and costs.
- Each *InRHODES CSE replacement alternative* will meet all of the requirements articulated in the *Requirements Document*. In other words, all quantitative benefits will be realized upon full implementation, for each of the alternatives. However, one alternative may start realizing benefits sooner than another.
- OCSS will not reduce staff as a result of implementing a new system.
- It is anticipated that the *InRHODES CSE replacement project* will commence in August of 2016. By then, all required funding approvals (federal and state) will have been obtained; the RFP will be written, released, and evaluated; and a vendor will be selected.
- The project team composition will be 90% contractor staff and 10% State staff.

Note: These assumptions are general in nature and apply to every alternative that is being considered. Assumptions that are specific to an alternative are discussed in the alternative specific sections of this report.



## 4.5 GROWTH RATES

In any CBA it is difficult to determine growth rates. Sometimes it is possible to observe a best-fitting trend, or the data indicates steady consistent behavior. More often, however, this is not the case, and making predictions becomes more challenging. This is especially true for a CBA with a time horizon of 12 years.

In this Cost-Benefit Analysis, for any non-recurring cost category where a firm fixed price contract exists (e.g. InRhodes M&O services) no growth rates have been applied. Similarly, any contract award considered for implementing either of the two other alternatives (i.e. *Adapt NJKiDS* and *Custom Build*) is also expected to be a firm fixed price contract and therefore no growth factors were applied to any non-recurring cost associated with these two alternatives.

Growth rate factors were applied to all recurring costs for each alternative.

### 4.6 CONSTRAINTS

As outlined in 4.1.2, while constraints are factors that are outside of the project effort itself, they must still be taken into consideration when planning for the project.

For the InRHODES CSE replacement initiative, the single most critical constraint is a financial one. Once the other DHS programs migrate off of InRHODES and onto the new IES, and these DHS programs (and other state programs) move off of the mainframe that InRHODES runs on, the OCSS will be faced with absorbing most of the financial responsibility for supporting InRHODES and the mainframe. This shift in costs will have a significant financial impact on the OCSS.



## **5 QUANTITATIVE BENEFITS**

The InRHODES CSE replacement initiative is associated with many high-value benefits—some of which can be directly translated into hard dollar values, and some of which cannot directly be quantified. Quantitative benefits are benefits to which a specific dollar value can be assigned.

### 5.1 OVERVIEW OF METHODOLOGY TO IDENTIFY AND QUANTIFY BENEFITS



- Stakeholder inputs regarding the Status Quo Gaps were used to identify the potential benefits that could be realized with any future CSE replacement system.
- The set of potential benefits were analyzed to determine the metrics that should be used to quantify each of these benefits.

The benefits, with which no metrics could be directly associated, were separated out as Qualitative Benefits.

. The general sources (InRHODES queries, etc.) for collection of the identified metrics data were identified, reviewed and agreed upon.

Metrics data were collected from each identified data source.

The benefits for which metrics data was not available were separated out as Qualitative Benefits.

- 4. The metrics data, which were collected through a questionnaire and the mini time study, were analyzed. Through a process of review and discussion the metrics and associated assumptions were reviewed, discussed, refined and finalized.
- Historic workload data were reviewed to project the relevant workload number to be used in benefits calculation for each year of the cost-benefit horizon.
- Benefits were computed based on the metrics collected, the projected workload data and the agreed-upon key assumptions.

RI OCSS & SymbioSys Solutions, Inc. January 28, 2016



## 5.2 HISTORIC AND PROJECTED WORKLOAD DATA

Historic workload analysis was performed to determine the value of pertinent workload-related metrics to be used in the computation of individual quantitative benefits.

The historic workload data that is presented in the following subsections has been extracted from OCSS staff and OCSE reports for years FFY 2010 through 2014. These historic workload data are accompanied by analysis, where applicable, of any observed trends, deviations, data variances, and possible reasoning or facts behind them.

The historical workload data and the trend analysis form the basis for estimating the key projected workload items for the time horizon covered by this Cost-Benefit Analysis. Projected workloads were derived based on an analysis of the 3-year and 5-year percent changes in the respective workload items.

These projected workload items and other metrics are presented in the *Benefits Analysis* spreadsheet that supplements this report. *The Benefits Analysis includes a worksheet containing key historical data for FFY 2010 through FFY 2014. The discussion on the following pages refers to the data on that worksheet.* 



#### 5.2.1 Total number of Cases



#### FIGURE 5-1: TOTAL NUMBER OF CASES

As can be seen from Figure 5-1 above, the caseload in Rhode Island rose from FFY 2010 to FFY 2012 but has decreased in FFY 2013 and FFY 2014. The three-year and five-year average annual rates of decline indicate that the total annual caseload is falling (by 0.39% and 0.24% respectively).

Even though the historic caseload data indicates a decrease in the total caseload, it is highly unlikely that this downward trend will continue throughout the cost-benefit time horizon. Therefore, the study has assumed that the caseload will stay steady with no significant increase per year.

The projected caseload takes the FFY 2014 caseload as the baseline, and assumes a growth rate of 0.0% in each year of the Cost-benefit time horizon.





#### 5.2.2 Total number of Cases with Orders Established

FIGURE 5-2 - % OF CASES WITH ORDERS ESTABLISHED

As can be seen from Figure 5-2 above, the percentage of cases with orders established has been increasing since 2010. The three-year and five-year average percent change indicates that cases with established orders are increasing by 2.36% and by 2.23%, respectively.

The number of cases with established orders as a percentage of the total caseload is also increasing. This percentage has increased each year from FFY 2010.

Based on the above historic data and trend analysis, the **projected % of cases with established orders** is estimated to be 69%, which is the 3-year average for the last 3-years (FFY 2012 through FFY 2014) for this workload item.



#### 5.2.3 Paying Cases



#### FIGURE 5-3 - % OF PAYING CASES (CASES WITH COLLECTIONS)

As can be seen from Figure 5-3 above, the percentage of paying cases has been increasing from FFY 2010 to FFY 2014. The three-year and five-year average annual change rates indicate the number of paying cases are increasing by 2.74% and 2.42%, respectively.

Based on the above historic data, the *projected % of paying cases* is estimated to be 41%, which is the 3-year average for the last 3-years (FFY 2012 through FFY 2014) for this workload item.



#### 5.2.4 Total Collections



FIGURE 5-4- TOTAL COLLECTIONS

As can be seen from Figure 5-4 above, collections have been increasing from FFY 2010 to FFY 2014.

The 5-year average increase in collection is 3.4%. A *projected annual collections increase rate* of 3.4% has been estimated for each year of the cost-benefit time horizon.



#### 5.2.5 Staffing



FIGURE 5-5 FULL TIME EQUIVALENT POSITIONS

As can be seen from Figure 5-5 above, the number of full time equivalent positions has ranged from 63 to 70 positions. The FFY 2014 number of positions is 69.

The projected FTE count for each year of the cost-benefit time horizon uses the FFY 2014 FTE count as the baseline number with a 0% growth during each year thereafter. OCSS staffing is not expected to change significantly as staff turnover is very small.

#### 5.2.6 Other Workload Data

As can be seen from the *Historic Ops Data* tab of the accompanying '*Benefits Analysis*' spreadsheet, with a few exceptions, all the other historic data elements that were tracked for this analysis are essentially derived from a combination of the above-mentioned historic workload data elements.



## 5.3 CALCULATION OF BENEFITS

The quantitative benefits derived from each alternative can be broken down into three categories:

- 1. The first category is termed *Productivity Gains Benefits*. For this category, the value of benefits is derived by translating savings in FTE positions into increased collections i.e., the freed up resources could be assigned to activities directed at collecting child support, and thereby increasing collections.
- 2. The second category is termed *Faster Throughput Benefits*. For this category, the value of benefits is derived by translating the elapsed days saved on certain activities into increased collections i.e., faster throughput leading to faster enforcement of cases, thereby resulting in increased collections.
- 3. The third category is termed *Other Cost Savings*. Items under this category are associated with an anticipated direct (dollar value) cost saving because of the new implementation.

The definitions of each of these benefit categories, and the methods for calculating the respective benefits are presented below.

#### 5.3.1 Productivity Gains Benefits

*Productivity gains* benefits are expected to result from the new system bringing about measurable efficiency gains in specific types of activities.

For each such activity, the number of FTE positions that can be gained by the new implementation, are calculated as: the sum total of the time gained (across the state over a fixed period of time – week, year, etc.) in carrying out the activity using the new system <u>divided</u> by the average work time of an FTE for the period (week, year, etc., as applicable). The sum total of the FTE positions is then discounted to account for reduction in synergy. The discounted FTE gains are then multiplied by the projected collections per FTE for each year to compute the projected annual increases in collection. It may be noted that the projected *annual collections increase* so computed is further discounted to account for the 'diminishing returns' factor.

To elaborate, the benefits for this category are calculated as follows:

- a) Compute the expected FTEs gained as:
- *b)* Expected total time/effort saving (in person-hours) in carrying out a given activity using the new system, *multiplied by*,
- *c)* Volume of activity, *divided by*,
- d) Average time (hours) an FTE works during a year/week.
  The result of this calculation is the number of full time equivalent positions saved (gained) for the particular activity FTEs Saved.


Total the *FTEs Saved* from different activities pertaining to each benefit area (either functional area or subject area). – *Total FTEs Gained for Benefit* 

The dollar value of the benefit, in terms of expected increase in collections due to the FTEs gained, is computed as:

1. Total FTEs Gained for Benefit from 2. above,

# Multiplied by,

2. Estimated *Productivity Reduction factor* (due to the synergy loss in totaling effort saved from different activities within a benefit area)

# Multiplied by,

3. The projected collections per FTE position for the corresponding year in the analysis period

Multiplied by,

4. Estimated *Diminishing Returns factor* (due to the already high collection rates)

For example, if a total of 3 positions are saved (gained) for all of the activities pertaining to a given benefit, then the corresponding benefit in Year 5 will be 3 times the projected collections per FTE in Year 5, discounted for the *synergy loss factor* and further discounted for the *diminishing returns factor*.

### (i.e., 3 \* projected collections per FTE for Year 5 \* Synergy Loss factor \* Diminishing Returns factor)

It may be noted that the projected dollar value of each such calculated benefit for any year in the cost-benefit time horizon will vary based on the projected collections per FTE for that year. The calculated *full time equivalent positions saved (gained), the synergy loss factor and the diminishing returns factor*, however, are not associated with a growth factor – they are time independent.

Details of these calculations (i.e., the actual values for FTEs saved and the corresponding anticipated collection increases) are contained in the Benefits Analysis spreadsheet. The specific worksheets that contain this information are:

- Summary of Benefits.
- Productivity Gains FTEs.
- Assumptions.
- Projected Ops Data Status Quo.

These numbers have also been presented in the *Benefits Analysis* spreadsheet.

The *Benefits Analysis* spreadsheet also refers to other supporting source documents. These supporting documents include: (a) activity and workload metrics; (b) headcount report; and (c) other workload-related reports generated out of the InRHODES CSE suite.



# 5.3.2 Faster Throughput Benefits

*Faster Throughput* benefits are expected to result from the new system making it possible to shorten the time it takes to advance a case through various steps of the process, and ultimately make it a paying case - i.e., increased collections resulting from each additional day that a case becomes a paying case.

The value of the benefits under this category will depend on the stage within the Child Support services delivery process (*Case Initiation or Locate; Establishment; and Enforcement*) that a given case is in.

The benefits, or expected increased collections, at the different stages are computed as follows:

- a. For each activity that belongs to the *Case Initiation* or *Locate* categories, the expected increased collection is computed as the elapsed time (in days) expected to be gained from this activity <u>multiplied</u> by the number of times this activity is expected to take place during an entire year <u>multiplied</u> by the projected daily collection per case.
- b. For each activity that belongs to the *Establishment* category, the expected increased collection is computed as the elapsed time (in days) expected to be gained from this activity <u>multiplied</u> by the number of times this activity is expected to take place during an entire year <u>multiplied</u> by the projected daily collection per *established* case.
- c. For each activity that belongs to the *Enforcement* category, the expected increased collection is computed as the elapsed time (in days) expected to be gained from this activity <u>multiplied</u> by the number of times this activity is expected to take place during an entire year <u>multiplied</u> by the projected daily collection per paying case.

It may be noted that the projected dollar value of each such calculated benefit, for any year in the cost-benefit time horizon, will vary based on the projected daily collections per case for that year. The calculated *elapsed time gained*, however, will not change over time.

The data to compute these benefits have been derived from the *activity and workload metrics data* collected from the mini time study, OCSS staff expert judgment, and queries run against the InRHODES database. Where data collection was not possible, assumptions were made. All such assumptions were validated by OCSS staff.

Details of these calculations (i.e., the actual values for elapsed time gained and the corresponding anticipated collection increases) are contained in the Benefits Analysis spreadsheet. The specific worksheets that contain this information are:

- a. Summary of Benefits
- b. Faster Throughput
- c. Assumptions
- d. Projected Ops Data Status Quo



# 5.3.3 Other Cost Savings

*Other Cost Savings* benefits are direct dollar savings that are expected to result from the new system making it possible to eliminate certain costs - for example, cost savings in paper or supplies.

Details of these calculations are contained on the following Benefits Analysis spreadsheets:

- (1) Summary of Benefits.
- (2) Other Cost Savings.
- (3) Assumptions.



# 5.4 SPECIFIC 'PRODUCTIVITY GAINS' BENEFITS

The following subsections describe and quantify each identified benefit under the benefit category of *'Productivity Gains'*. For detailed Benefits Calculations, please refer to the <u>Benefits Analysis</u> <u>spreadsheet</u>.

For each benefit identified in this category, the Benefits Analysis spreadsheet presents the potential number of FTEs to be gained, and the associated estimated dollar value of increased collections for each year of the CBA time horizon.

Please note that though benefit values have been presented for each year of the CBA time horizon, the extent of the projected benefit to be realized by an alternative, in any given year, will depend on *when* the alternative *is* implemented.

# 5.4.1 Benefit #1: Case Initiation Productivity Gains

Table 5-1 below presents the key *Case Initiation*-related benefit factors (functionality and features of the new system) that can be expected to bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Contemporary self-service web interface for filing Application for	0.53
Child Support Services	
2. Fewer follow-up activities for self-service cases	0.12
3. Fewer follow-up activities for IV-A cases	0.84
4. Improved case matching	0.24
5. Automated CP scheduling	0.19
TOTAL FTES FOR CASE INITIATION	1.92

 TABLE 5-1: BENEFIT FACTORS FOR CASE INITIATION PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefits factors:



## Contemporary self-service web interface:

Presently, all child support applications are manually entered into InRHODES by the OCSS staff. The introduction of a self-service web based interface will: a) eliminate the need for these workers to enter a majority of the applications; b) produce more accurate information about the applications; and c) reduce the need to make follow-up phone calls to seek clarifications, get missing information, etc.

Using the calculation method outlined in section 5.3.1, taking the average number of new cases per year as the workload, this benefit will result in a savings (gain) of 0.53 FTEs.

# *Fewer follow-up activities for self-service cases:*

The self-service web based interface will require applicants to enter required information and attach required documentation. This combined with the new system rejecting an incomplete application will result in fewer follow-up phone calls to seek clarification, or get missing information, etc.

Using the calculation method outlined in section 5.3.1, and taking the number of applications expected to be filed through self-service means per year as the workload, this benefit will result in a savings (gain) of 0.12 FTEs.

### Fewer follow-up activities for IV-A Cases:

The new system will provide an improved interface with the IV-A system. This will result in OCSS staff spending less time pursuing missing IV-A information as well as missing documents, such as birth certificates.

Using the calculation method outlined in section 5.3.1, taking the average number of IV-A cases per year as the workload times the average time spent by staff chasing missing information, this benefit will result in a savings (gain) of 0.84 FTEs.

#### Improved Case Matching:

The future CSE replacement system will use intelligent processing to improve automated case matching and present staff with weighted match possibilities. In addition, the replacement system will reduce or eliminate presenting previously excluded matches.

Using the calculation method outlined in section 5.3.1, taking the average time per week that agents spend manually reviewing case lists per week, this benefit will result in a savings (gain) of 0.24 FTEs.

# Automated CP Scheduling:

The future CSE replacement system will incorporate automated scheduling and rescheduling capabilities for the custodial parent. In the present system this is a completely manual process.

Using the calculation method outlined in section 5.3.1, taking the number of CP appointments scheduled and rescheduled per year, and the average time it takes to complete these activities, this benefit will result in a savings (gain) of 0.19 FTEs.

Table 5-2 below presents the projected dollar value total benefits that could potentially be realized from the *Case Initiation Productivity Gains* (of 1.927 FTEs) during each year of the CBA horizon:

YEAR	BENEFIT AMOUNT*
Year 1Benefit	\$986,039
Year 2 Benefit	\$1,019,564
Year 3 Benefit	\$1,054,229
Year 4 Benefit	\$1,090,073
Year 5 Benefit	\$1,127,136
Year 6 Benefit	\$1,165,458
Year 7 Benefit	\$1,205,084
Year 8 Benefit	\$1,246,057
Year 9 Benefit	\$1,288,423
Year 10 Benefit	\$1,332,229
Year 11 Benefit	\$1,377,525
Year 12 Benefit	\$1,424,361

\* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-2: POTENTIAL BENEFITS FROM CASE INITIATION PRODUCTIVITY GAINS

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#### 5.4.2 **Benefit #2: Locate Productivity Gains**

Table 5-3 below presents the key Locate-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Smart handling of Locate lead sources	0.11
2. Automatic generation of letters	0.50
3. Enhanced locate processes	2.89
TOTAL FTES FOR LOCATE	3.50

**TABLE 5-3: BENEFIT FACTORS FOR LOCATE PRODUCTIVITY GAINS** 

The following is a brief explanation of the above benefit factor:

Smart handling of locate lead sources:

The future CSE replacement system will automatically validate addresses based on the reliability of the source and the recency of the address. The user will be prompted to supply more complete information if an invalid address is entered.

Using the calculation method outlined in section 5.3.1, and taking the average number of locate leads discarded per year as the workload, this benefit results in a savings (gain) of 0.11 FTEs.

The following is a brief explanation of the above benefit factor:

Automatic generation of letters:

Currently, the OCSS staff manually generates a number of letters. The future CSE replacement system will automate a number of these letters.

Using the calculation method outlined in section 5.3.1, and taking the number of outbound communications per year as the workload, and reducing this by the percentage of outbound communications that are statutorily required to be mailed, this benefit results in a savings (gain) of 0.5 FTEs.

Enhanced Locate Processes:

Presently, a case is in Locate status only if the address of record is designated as "bad". The future CSE replacement system will employ a "continuous locate" process where the system will have the ability to perform continuous locate activities and archive data for future use. This process will enable the OCSS to proactively validate the accuracy of addresses on record, and reduce the number of mailings that are sent to bad addresses and reduce the time staff would eventually spend manually searching various resources for more current addresses.

Using the calculation method outlined in section 5.3.1, and taking the average time spent on each lead that needs manual attention times the number of cases in *Locate status*, times the number of sources that are manually looked up for each case in *Locate status* (annually) times the percentage (extent to which) manual lookup will no longer be required, this benefit results in a savings (gain) of 2.89 FTEs.

YEAR	BENEFIT AMOUNT*
Year 1 Benefit	\$1,795,131
Year 2 Benefit	\$1,856,165
Year 3 Benefit	\$1,919,275
Year 4 Benefit	\$1,984,530
Year 5 Benefit	\$2,052,004
Year 6 Benefit	\$2,121,773
Year 7 Benefit	\$2,193,913
Year 8 Benefit	\$2,268,506
Year 9 Benefit	\$2,345,635
Year 10 Benefit	\$2,425,387
Year 11 Benefit	\$2,507,850
Year 12 Benefit	\$2,593,117

Table 5-4 below presents the projected dollar value benefits to be realized (from the *Locate Productivity Gains* of 3.5 FTEs) during each year of the CBA horizon:

#### \* Note:

- 1. No benefits will be realized until the year of implementation of an alternative
- 2. Only 50% of calculated benefits will be realized during the first year of implementation
- 3. 75% of calculated benefits will be realized during the second year of implementation
- 4. Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-4: POTENTIAL BENEFITS FROM LOCATE PRODUCTIVITY GAINS

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# 5.4.3 Benefit #3: Establishment Productivity Gains

Table 5-5 below presents the key *Establishment*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Improved integration with the Family Court System	6.45
2. Auto-generating petitions	6.75
3. Comprehensive and well-integrated Guideline Worksheets	1.11
4. Automatic Scheduling of DNA tests	0.08
TOTAL FTES FOR ESTABLISHMENT	14.39

TABLE 5-5: BENEFIT FACTORS FOR ESTABLISHMENT PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

### Improved Integration with the RI Family Court System:

The RI Family Court and the OCSS previously used the InRHODES system to schedule child support-related hearings. The introduction of the RI Family Court's e-Filing system in 2014 significantly changed the manner in which the OCSS communicates with the Family Court. The OCSS must now manually upload documents into the e-Filing system, and manually download documents received from the Court. This has forced the OCSS to shift the daily duties of 2 full time employees to this effort. The OCSS is concerned that the inevitable expansion of the e-filing system to "reciprocal" cases will require the shifting of 4 more full-time staff members. The new CSE solution is expected to reinstitute the level of integration the OCSS once enjoyed with the RI Family Court.

Using the calculation method outlined in section 5.3.1, and the number of manual domestic and reciprocal transmittals, this benefit will result in a savings (gain) of 6.45 FTEs.

#### Auto-generating petitions:

Presently, orders are generated manually by OCSS. The future CSE replacement system will automatically generate orders thus eliminating manual typing and retyping.



Using the calculation method outlined in section 5.3.1, and taking the average number of orders typed and retyped per year as the workload, this benefit will result in a savings (gain) of 6.75 FTEs.

### Comprehensive and well-integrated Guideline Worksheet:

The future CSE replacement system will include a comprehensive and fully integrated rulesbased guideline calculation worksheet. This will allow staff to generate what-if scenarios, and more easily calculate support order amounts while appearing before the RI Family Court.

Using the calculation method outlined in section 5.3.1 and taking the average number of guideline calculations per year, this benefit will result in a savings (gain) of 1.11 FTEs.

#### Automatic Scheduling of DNA tests:

The future CSE replacement system will incorporate automated scheduling and rescheduling capabilities for a DNA testing. In the present system this is a completely manual process.

Using the calculation method outlined in section 5.3.1, and taking the average number DNA tests scheduled and rescheduled per year as the workload, this benefit will result in a savings (gain) of 0.08 FTEs.

Table 5-6 below presents the projected dollar value benefits to be realized (from the *Establishment Productivity Gains* of 14.39FTEs) during each year of the CBA horizon:

YEAR	BENEFIT AMOUNT*
Year 1 Benefit	\$7,374,241
Year 2 Benefit	\$7,624,965
Year 3 Benefit	\$7,884,214
Year 4 Benefit	\$8,152,277
Year 5 Benefit	\$8,429,454
Year 6 Benefit	\$8,716,056
Year 7 Benefit	\$9,012,402
Year 8 Benefit	\$9,318,823
Year 9 Benefit	\$9,635,663
Year 10 Benefit	\$9,963,276
Year 11 Benefit	\$10,302,027
Year 12 Benefit	\$10,652,296

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	YEAR	<b>BENEFIT AMOUNT*</b>
* Note:		
(1)	No benefits will be realized until the year of	implementation of an alternative
(2)	(2) Only 50% of calculated benefits will be realized during the first year of implementation	
(3)	(3) 75% of calculated benefits will be realized during the second year of implementation	
(4)	(4) Full value of calculated benefits will be realized for all years following the second year of implementation	
TABLE 5-6: POTENTIAL BENEFITS FROM ESTABLISHMENT PRODUCTIVITY GAINS		



# 5.4.4 Benefit #4: Enforcement Productivity Gains

Table 5-7 below presents the key *Enforcement*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Auto-identifying and prioritizing cases that require attention	1.80
2. Automated tracking of Suspended Orders	0.19
TOTAL FTES FOR ENFORCEMENT	1.99

TABLE 5-7: BENEFIT FACTORS FOR ENFORCEMENT PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

#### Auto-identifying and prioritizing cases that require attention:

The new system will include an increased level of automated processing, and an improved toolset, to assist workers in locating, reviewing and prioritizing enforceable cases that require attention.

Using the calculation method outlined in section 5.3.1, and taking the average number of enforcement workers as the workload and multiplying times the expected improvement from auto-identifying and prioritizing cases, this benefit will result in a savings (gain) of 1.80 FTEs.

### Automated tracking of suspended cases:

The InRHODES CSE system presently does not provide any means for the worker to suspend an order or prompt them when to re-initiate an order. The new system must have a mechanism to either automatically initiate the next required action on the case or to prompt the worker to take an action.

Using the calculation method outlined section 5.3.1, and taking the number of suspended cases per year as the workload, this benefit will result in a savings (gain) of 0.19 FTEs.

Table 5-8 below presents the projected dollar value benefits to be realized (from the *Enforcement Productivity Gains* of 1.99 FTEs) during each year of the CBA horizon:



YEAR	BENEFIT AMOUNT*
Year 1 Benefit	\$1,017,842
Year 2 Benefit	\$1,052,449
Year 3 Benefit	\$1,088,232
Year 4 Benefit	\$1,125,232
Year 5 Benefit	\$1,163,490
Year 6 Benefit	\$1,203,048
Year 7 Benefit	\$1,243,952
Year 8 Benefit	\$1,286,246
Year 9 Benefit	\$1,329,979
Year 10 Benefit	\$1,375,198
Year 11 Benefit	\$1,421,955
Year 12 Benefit	\$1,470,301

#### \* Note:

(1) No benefits will be realized until the year of implementation of an alternative

(2) Only 50% of calculated benefits will be realized during the first year of implementation

(3) 75% of calculated benefits will be realized during the second year of implementation

(4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-8: POTENTIAL BENEFITS FROM ENFORCEMENT PRODUCTIVITY GAINS



# 5.4.5 Benefit #5: Financials Productivity Gains

Table 5-9 below presents the key *Financials*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

	BENEFIT FACTOR	FTES GAINED
1.	Improved case level financial reporting/processing, and reconciliation	1.16
2.	Time spent by OCSS staff referring cases to the business office for a case issue	0.16
	TOTAL FTES FOR FINANCIALS	1.32

 TABLE 5-9: BENEFIT FACTORS FOR FINANCIALS PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

#### Improves case level financial reporting, processing, and reconciliation:

The InRHODES CSE system does not have adequate data elements to capture overpayment, recoupments, and other needed information such as fees. This leads to agents having to contact the business office staff for assistance. The future CSE replacement system will have all the required data elements to properly account for financial information, and thus eliminate most of the need to handle financial exceptions.

Using the calculation method outlined in 5.3.1, and taking the number of hours on average spent a day on financial exceptions by business office staff as the workload, this benefit will result in a savings (gain) of 1.80 FTEs.

### Time spent by OCSS staff referring cases to the business office for a case issue:

InRHODES lacks the ability to automatically make retroactive adjustments to case records. When the need for an adjustment is identified by a case worker, the caseworker must provide a written summary of the adjustments required, and forward the case to the Business Office. The Business Office must then manually adjust the case record. The new CSE system will automatically make adjustments and establish overpayments or issue supplemental payments as appropriate.



Using the calculation method outlined in 5.3.1, and taking the number of times a case is referred to the business office as the as the workload, this benefit will result in a savings (gain) of 0.19 FTEs.

YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$674,761
Year 2 Benefit	\$697,703
Year 3 Benefit	\$721,424
Year 4 Benefit	\$745,953
Year 5 Benefit	\$771,315
Year 6 Benefit	\$797,540
Year 7 Benefit	\$824,656
Year 8 Benefit	\$852,695
Year 9 Benefit	\$881,686
Year 10 Benefit	\$911,664
Year 11 Benefit	\$942,660
Year 12 Benefit	\$974,711

Table 5-10 below presents the projected dollar value benefits to be realized (from the *Financials Productivity Gains* of 1.32 FTEs) during each year of the CBA horizon:

\* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-10: POTENTIAL BENEFITS FROM FINANCIALS PRODUCTIVITY GAINS



# 5.4.6 Benefit #6: Interstate Productivity Gains

Table 5-11 below presents the key *Interstate*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Improved Interstate application filing (self-service for CP)	1.67
2. Fully automated CSNET	0.10
TOTAL FTES FOR INTERSTATE	1.77

 TABLE 5-11: BENEFIT FACTORS FOR INTERSTATE PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

### Improves interstate application filing (self-service for the CP):

The handling of interstate application filing currently is a manual process. With the future CSE replacement system, the CP will be able to file their own application. The introduction of a self-service web interface will: a) eliminate the need for workers to enter a majority of the applications; b) produce more accurate information about the applications; and c) reduce the need to make follow-up phone calls to seek clarifications, get missing information etc.

Using the calculation method outlined in 5.3.1, and taking the average number of initiating Interstate cases per year as the workload, this benefit will result in a savings (gain) of 1.67 FTEs.

### Fully automated CSNET:

Better integration of CSNET system will facilitate communication with other CSENET states, and consequently reduce the frequency in which workers generate letters to request or provide information to other States.

Using the calculation method outlined in 5.3.1, and taking the average number of Non-CSNET contacts per year as the workload, this benefit will result in a savings (gain) of 0.10 FTEs.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$907,325
Year 2 Benefit	\$938,175
Year 3 Benefit	\$970,072
Year 4 Benefit	\$1,003,055
Year 5 Benefit	\$1,037,159
Year 6 Benefit	\$1,072,422
Year 7 Benefit	\$1,108,885
Year 8 Benefit	\$1,146,587
Year 9 Benefit	\$1,185,571
Year 10 Benefit	\$1,225,880
Year 11 Benefit	\$1,267,560
Year 12 Benefit	\$1,310,657

Table 5-12 below presents the projected dollar value benefits to be realized (from the *Interstate Productivity Gains* of 1.77 FTEs) during each year of the CBA horizon:

#### \* Note:

(1) No benefits will be realized until the year of implementation of an alternative

(2) Only 50% of calculated benefits will be realized during the first year of implementation

(3) 75% of calculated benefits will be realized during the second year of implementation

(4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-12: POTENTIAL BENEFITS FROM INTERSTATE PRODUCTIVITY GAINS



# 5.4.7 Benefit #7: IV-A Interface Productivity Gains

Table 5-13 below presents the key *IV-A Interface*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Improved interface IV-A - missing data	0.12
2. Access to birth certificates for IV-A cases	0.04
TOTAL FTES FOR IV-A INTERFACE	0.16

 TABLE 5-13: BENEFIT FACTORS FOR IV-A INTERFACE PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

### Improved interface IV-A missing data:

OCSS staff spends time contacting the IV-A agency for missing data from the IV-A application. The future CSE replacement system will have an improved interface with the IV-A Agency and will also not present the case to OCSS staff until it all information is complete.

Using the calculation method outlined in 5.3.1, and taking the number of IV-A contracts per year as the workload, this benefit will result in a savings (gain) of 0.12 FTEs.

Access to birth certificates for IV-A cases:

The future CSE replacement system will have more access to birth certificate information from Vital Records.

Using the calculation method outlined in 5.3.1, and taking the number of IV-A cases where they cannot obtain birth certificate information from Vital Records as the workload, this benefit will result in a savings (gain) of 0.04 FTEs.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$78,893
Year 2 Benefit	\$81,575
Year 3 Benefit	\$84,349
Year 4 Benefit	\$87,217
Year 5 Benefit	\$90,182
Year 6 Benefit	\$93,248
Year 7 Benefit	\$96,419
Year 8 Benefit	\$99,697
Year 9 Benefit	\$103,087
Year 10 Benefit	\$106,592
Year 11 Benefit	\$110,216
Year 12 Benefit	\$113,963

Table 5-14 below presents the projected dollar value benefits to be realized (from the *IV-A Interface Productivity Gains* of 0.15 FTEs) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-14: POTENTIAL BENEFITS FROM IV-A INTERFACE PRODUCTIVITY GAINS



# 5.4.8 Benefit #8: Case Management Productivity Gains

Table 5-15 below presents the key *Case Management*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
<ol> <li>Optimized workflow, dashboard, and better worker performance tracking</li> </ol>	9.9
2. Improved Messaging from new solution	0.68
3. Automated Self Assessment	0.11
TOTAL FTES FOR CASE MANAGEMENT	10.68

 TABLE 5-15: BENEFIT FACTORS FOR CASE MANAGEMENT PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

### Optimized workflow, dashboard, and better worker performance tracking:

InRHODES lacks the ability to automatically advance a case to the next functional unit once all necessary actions have been taken prior to enforcement. Although the OCSS has access to a Data Warehouse that contains an abundance of useful performance and case related information, the reports in the warehouse are difficult for non-technical users to retrieve, and as a result the services of the InRHODES Maintenance and Support contractor must be employed to obtain the reports. This has unfortunately reduced the usage of these operational reports. InRHODES also lacks worker based case management features that enable staff to effectively organize and prioritize work, and thereby focus on cases that more urgently require attention. The future CSE replacement solution will use intelligent features and tools, such as workflow and electronic dashboards to better track next step case actions and monitor worker and unit performance.

Using the calculation method outlined in 5.3.1, and taking the number of agents working on cases as the workload, this benefit will result in a savings (gain) of 9.90 FTEs.

### Improved Messaging from new solution:

The current alerts mechanism in InRHODES includes two types of alerts: (1) informational and (2) action. Presently, OCSS workers receive so many redundant informational alerts that many staff ignore these alerts. The future CSE replacement system will include mechanisms to present workers with more filtered and focused alerts. This will eliminate the need for the



workers to look through a large number of alerts and eliminate those that do not pertain to their activities. This enhanced quality of the alerts system is expected to lead to FTE gains.

Using the calculation method outlined in 5.3.1, and taking the number of informational and action oriented alerts as the workload, this benefit will result in a savings (gain) of 0.68 FTEs.

#### Automated Self Assessment:

The current Self Assessment process is a completely manual one. The future InRHODES CSE replacement solution will automate those aspects of the review that can be validated through intelligent business rules. This will allow staff to focus on those aspects of the review that require human judgment and enable the OCSS to devote more time to providing further training in the areas noted as deficient through the Self Assessment.

Using the calculation method outlined in 5.3.1, and taking the number of self-assessment case types as the workload, this benefit will result in a savings (gain) of 0.11 FTEs.

Table 5-16 below presents the projected dollar value benefits to be realized (from the Case
Management Productivity Gains of 10.68 FTEs) during each year of the CBA horizon:

YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$5,474,999
Year 2 Benefit	\$5,661,149
Year 3 Benefit	\$5,853,628
Year 4 Benefit	\$6,052,651
Year 5 Benefit	\$6,258,241
Year 6 Benefit	\$6,471,228
Year 7 Benefit	\$6,691,250
Year 8 Benefit	\$6,918,753
Year 9 Benefit	\$7,153,990
Year 10 Benefit	\$7,397,226
Year 11 Benefit	\$7,648,732
Year 12 Benefit	\$7,908,788

\* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation



YEAR	<b>BENEFIT AMOUNT*</b>
(3) 75% of calculated benefits will be realized during the second year of implementation	
(4) Full value of calculated benefits will be realized for all years following the second year of implementation	
TABLE 5-16: POTENTIAL BENEFITS FROM CASE MANAGEMENT PRODUCTIVITY GAINS	

#### 5.4.9 Benefit #9: Forms Improvements Productivity Gains

Table 5-17 below presents the key *Forms Improvements*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Central mailing	0.90
TOTAL FTES FOR REPORTING	0.90

 TABLE 5-17: BENEFIT FACTORS FOR FORMS IMPROVEMENTS PRODUCTIVITY GAINS

The following is a brief explanation of the above benefit factor:

#### Maximize Central Mailing:

Presently, any outgoing document that is generated manually must be hand-stuffed into an envelope by the case worker and then personally delivered to the local mailroom. The future InRHODES CSE replacement solution will automatically generate most, if not all, outgoing documents thereby enabling the OCSS to take full advantage of the State's central mailing facility.

Using the calculation method outlined in 5.3.1, and taking the number of insertions done annually as the workload, this benefit will result in a savings (gain) of 0.90 FTEs.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$460,271
Year 2 Benefit	\$475,921
Year 3 Benefit	\$492,102
Year 4 Benefit	\$508,833
Year 5 Benefit	\$526,134
Year 6 Benefit	\$544,022
Year 7 Benefit	\$562,519
Year 8 Benefit	\$581,645
Year 9 Benefit	\$601,421
Year 10 Benefit	\$621,869
Year 11 Benefit	\$643,013
Year 12 Benefit	\$664,875

Table 5-18 below presents the projected dollar value benefits to be realized (from the *Forms Improvement Productivity Gains* of 0.90 FTEs) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-18: POTENTIAL BENEFITS FROM FORM IMPROVEMENT PRODUCTIVITY GAINS



# 5.4.10 Benefit #10: Document Management Productivity Gains

Table 5-19 below presents the key *Document Management*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Reduction in manual scanning of documents by staff	0.42
TOTAL FTES FOR DOCUMENT MANAGEMENT	0.42

TABLE 5-19: BENEFIT FACTORS FOR DOCUMENT MANAGEMENT PRODUCTIVITY GAINS

The following is a brief explanation of the above benefit factor:

Reduction in manual scanning by staff:

Presently, OCSS staff manually scan, index, and shred all important case related documents. The future CSE replacement system will use 2D barcoding and have imaging capabilities to automatically image and index important case related documents. There will remain a small number of incoming documents that will require manual scanning.

Using the calculation method outlined in 5.3.1, and taking the number of documents scanned, indexed, and shredded as the workload, this benefit will result in a savings (gain) of 0.42 FTEs.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$214,365
Year 2 Benefit	\$221,654
Year 3 Benefit	\$229,190
Year 4 Benefit	\$236,982
Year 5 Benefit	\$245,040
Year 6 Benefit	\$253,371
Year 7 Benefit	\$261,986
Year 8 Benefit	\$270,893
Year 9 Benefit	\$280,104
Year 10 Benefit	\$289,627
Year 11 Benefit	\$299,475
Year 12 Benefit	\$309,657

Table 5-20 below presents the projected dollar value benefits to be realized (from the *Document Management Improvement Productivity Gains* of 0.42 FTEs) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-20: POTENTIAL BENEFITS FROM DOCUMENT MANAGEMENT PRODUCTIVITY GAINS



# 5.4.11 Benefit #11: Shorter Learning Curve Productivity Gains

Table 5-21 below presents the key *Shorter Learning Curve*-related benefit factors (functionality and features of the new system) that would bring about productivity gains, and the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Eliminate FTE loss due to steep learning curve for new users	0.75
TOTAL FTES FOR SHORTER LEARNING CURVE	0.75

TABLE 5-21: BENEFIT FACTORS FOR SHORTER LEARNING CURVE PRODUCTIVITY GAINS

The following is a brief explanation of the above benefit factor:

Eliminate FTE loss due to the steep learning curve for new users:

The learning curve for a new user to feel comfortable in the use of InRHODES for day-to-day operations is fairly steep. Additionally, experienced users are required to spend time with new users while they gain the required comfort level with InRHODES. The new system will have a contemporary and more intuitive interface with guided navigations and screen flows and context sensitive help – leading to short learning curves and consequent increases in productivity.

Using the calculation method outlined in 5.3.1, and taking the average productivity loss per new user per week and the average person-hours spent per week by experienced workers to help each new user as the workload items, this benefit will result in a savings (gain) of 0.75 FTEs.

Table 5-22 on the next page presents the projected dollar value benefits to be realized (from the *Shorter Learning Curve Productivity Gains* of 0.75 FTEs) during each year of the CBA horizon:



YEAR	BENEFIT AMOUNT*
Year 1 Benefit	\$384,301
Year 2 Benefit	\$397,368
Year 3 Benefit	\$410,878
Year 4 Benefit	\$424,848
Year 5 Benefit	\$439,293
Year 6 Benefit	\$454,229
Year 7 Benefit	\$469.673
Year 8 Benefit	\$485,641
Year 9 Benefit	\$502,153
Year 10 Benefit	\$519,227
Year 11 Benefit	\$536,880
Year 12 Benefit	\$555,134

\* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-22: POTENTIAL BENEFITS FROM SHORTER LEARNING CURVE PRODUCTIVITY GAINS



# 5.4.12 Benefit #12: Other Productivity Gains

Table 5-23 below presents the other key benefit factors (functionality and features of the new system) that would bring about productivity gains, along with the resultant FTEs gained:

BENEFIT FACTOR	FTES GAINED
1. Responding to public information type information requests	2.25
2. Capturing up-to-date information via self-service components	0.52
TOTAL FTES FOR OTHER PRODUCTIVITY GAINS	2.77

TABLE 5-23: BENEFIT FACTORS FOR OTHER PRODUCTIVITY GAINS

The following is a brief explanation of each of the above benefit factors:

### Responding to public information type of information request:

Presently, OCSS staff field requests for both general and specific information in person. The future CSE replacement system will include an expanded portal/webpage that will provide the capability for information seekers to retrieve the most commonly sought information/data as well as specific information. This is expected to lead to productivity gains, as the workers will need to only attend to those inquiries that the portal does not provide information for.

Using the calculation method outlined in 5.3.1, and taking the annual number of general information requests and the annual number of specific information requests as the workload item, this benefit will result in a savings (gain) of 2.25 FTEs.

### Capturing up-to-date information via self-service:

All updates to case information are now handled manually. The future CSE replacement system will have a self-service web portal that will allow for case related information to be updated by the customer.

Using the calculation method outlined in 5.3.1, and taking the number of contacts for updated information done annually as the workload, this benefit will result in a savings (gain) of 0.52 FTEs.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$1,418,671
Year 2 Benefit	\$1,466,906
Year 3 Benefit	\$1,516,780
Year 4 Benefit	\$1,568,351
Year 5 Benefit	\$1,621,675
Year 6 Benefit	\$1,676,812
Year 7 Benefit	\$1,733,824
Year 8 Benefit	\$1,792,774
Year 9 Benefit	\$1,853,728
Year 10 Benefit	\$1,916,755
Year 11 Benefit	\$1,981,924
Year 12 Benefit	\$2,049,310

Table 5-24 below presents the projected dollar value benefits to be realized (from the *Other Productivity Gains* of 2.77 FTEs) during each year of the CBA horizon:

#### \* Note:

(1) No benefits will be realized until the year of implementation of an alternative

(2) Only 50% of calculated benefits will be realized during the first year of implementation

(3) 75% of calculated benefits will be realized during the second year of implementation

(4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-24: POTENTIAL BENEFITS FROM OTHER PRODUCTIVITY GAINS



# 5.5 Specific 'Faster Throughput' benefits

The following subsections describe and quantify each identified benefit under the benefit category of *'Faster Throughput'*. For each such benefit, the potential elapsed time gained and the associated potential dollar value of increased collections, for each year of the CBA time horizon, have been presented. For detailed Benefits Calculations, please refer to the <u>Benefits Analysis spreadsheet</u>.

Please note that though the benefit values have been presented for each year of the CBA time horizon, the extent of the projected benefit to be realized by an alternative in any given year will depend on *when* the alternative *is* implemented.

# 5.5.1 Benefit #13: Speeding up Case Initiation

Table 5-25 below presents the key *Case Initiation*-related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times, and the resultant days gained:

BENEFIT FACTOR	DAYS GAINED
1. Days gained per case from speeding up Case Initiation activities	3.0
TOTAL DAYS FOR SPEEDING UP CASE INITIATION	3.00

 TABLE 5-25: BENEFIT FACTORS FOR SPEEDING UP CASE INITIATION

The following is a brief explanation of the above benefit factor:

Speeding up Case Initiation activities:

The inclusion of a self-service web interface for clients to file applications and provide the pertinent information necessary to set up a case is expected to speed the case initiation process by 3 elapsed days.

The related benefits for each year in the CBA time horizon are calculated by multiplying 3 elapsed days *by* the projected collections (for the corresponding year) per case per day, and then multiplying the result by the projected number of new cases per year.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$33,961
Year 2 Benefit	\$35,115
Year 3 Benefit	\$36,309
Year 4 Benefit	\$37,544
Year 5 Benefit	\$38,820
Year 6 Benefit	\$40,140
Year 7 Benefit	\$41,505
Year 8 Benefit	\$42,916
Year 9 Benefit	\$44,375
Year 10 Benefit	\$45,884
Year 11 Benefit	\$47,444
Year 12 Benefit	\$49,057

Table 5-26 below presents the projected dollar value benefits to be realized (from the *Faster Case Initiation Throughput Gains* of 3.00 days) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-26: POTENTIAL BENEFITS FROM SPEEDING UP CASE INITIATION



# 5.5.2 Benefit #14: Speeding up Locate

Table 5-27 below presents the key *Locate*-related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times, and the resultant days gained:

BENEFIT FACTOR	DAYS GAINED
(1) Time gained per case from speeding up member locate activities	12.70
TOTAL DAYS FOR SPEEDING UP LOCATE	12.70

 TABLE 5-27: BENEFIT FACTORS FOR SPEEDING UP LOCATE

The following is a brief explanation of the above benefit factor:

Time gained from speeding up member locate activities:

The elapsed time gained for this benefit factor stems primarily from employing a "continuous locate" process. Under this process the future CSE replacement system will be continuously updating information and weighing its reliability,

Using the average number of days to obtain a good address multiplied by the expected decrease as a result of the new solution, this benefit factor is expected to speed up member I ocates by 12.70 elapsed days.

The related benefits for each year in the CBA time horizon are calculated by multiplying 12.70 by the projected collections (for the corresponding year) per case per day, and then multiplying the result by the projected number of new cases per year.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$143,767
Year 2 Benefit	\$148,656
Year 3 Benefit	\$153,710
Year 4 Benefit	\$158,936
Year 5 Benefit	\$164,340
Year 6 Benefit	\$169,927
Year 7 Benefit	\$175,705
Year 8 Benefit	\$181,679
Year 9 Benefit	\$187,856
Year 10 Benefit	\$194,243
Year 11 Benefit	\$200,847
Year 12 Benefit	\$207,676

Table 5-28 below presents the projected dollar value benefits to be realized (from the *Faster Locate Throughput Gains* of 12.70 days) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-28: POTENTIAL BENEFITS FROM SPEEDING UP LOCATE



### 5.5.3 Benefit #15: Speeding up Establishment

Table 5-29 below presents the key *Establishment*-related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times and the resultant days gained:

BENEFIT FACTOR	DAYS GAINED
1. Time gained in combining paternity and support	30.0
2. Time gained due to interface with Lab System for results	0.19
TOTAL DAYS FOR SPEEDING UP ESTABLISHMENT	30.19

TABLE 5-29: BENEFIT FACTORS FOR SPEEDING UP ESTABLISHMENT

The following is a brief explanation of the each of the above benefit factors:

#### *Time gained in combining paternity and establishment:*

OCSS as a matter of business process separately establishes paternity and then proceeds to perform support order establishment functions. By combining the two processes, OCSS could save significant time. Based on OCSS expert judgment combining paternity and support order establishment could save 6 to 8 weeks. The Cost Benefit Analysis uses the lesser figure of 6 weeks. Using the expert judgment estimate results in a speed up of Establishment by 30 days.

#### Time gained due to interface with Lab Systems for results:

Implementing an online interface with the Lab Corp systems to obtain DNA produces a gain of 0.19 days.

The total elapsed time for speeding up Establishment is 30.19 days.

The related benefits for each year in the CBA time horizon are calculated by multiplying 30.19 by the projected collections (for the corresponding year) per day per established case, and then multiplying the result by the projected number cases with orders established during the year.



YEAR	<b>BENEFIT AMOUNT*</b>
Year 1 Benefit	\$733,479
Year 2 Benefit	\$758,417
Year 3 Benefit	\$784,203
Year 4 Benefit	\$810,866
Year 5 Benefit	\$838,435
Year 6 Benefit	\$866,942
Year 7 Benefit	\$896,418
Year 8 Benefit	\$926,896
Year 9 Benefit	\$958,411
Year 10 Benefit	\$990,997
Year 11 Benefit	\$1,024,691
Year 12 Benefit	\$1,059,530

Table 5-30 below presents the projected dollar value benefits to be realized (from the FasterEstablishment Throughput Gains of 30.19 days) during each year of the CBA horizon:

#### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-30: POTENTIAL BENEFITS FROM SPEEDING UP ESTABLISHMENT



# 5.5.4 Benefit #16: Speeding up Enforcement

Table 5-31 below presents the key *Enforcement*-related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times, along with the resultant Days gained:

BENEFIT FACTOR	DAYS GAINED
Elapsed time gained by better Early intervention solutions to prevent arrears prior to IWO becoming active, etc.)	5.7
Elapsed time gained by automating remedies such as Motion for Contempt * expected % of cases where these remedy will be automated	0.2
TOTAL DAYS FOR SPEEDING UP ENFORCEMENT	5.9

 TABLE 5-31: BENEFIT FACTORS FOR SPEEDING UP ENFORCEMENT

The following is a brief explanation of each of the above benefit factors:

# <u>Elapsed time gained through better Early Intervention solutions to prevent arrears prior to IWO</u> <u>becoming active:</u>

The inclusion of Early Intervention techniques to prevent arrears from accruing prior to the IWO becoming active is expected to speed up the enforcement process by 5.7 days.

# Elapsed time gained by automating remedies such as Motion of Contempt:

The inclusion of mechanisms for more timely detection of delinquencies and auto-initiating enforcement remedies such as Motion for Contempt, when pertinent, is expected to speed up the enforcement process on an average by 0.2 days.

The related benefits for each year in the CBA time horizon are calculated by multiplying 5.9 by the projected collections (for the corresponding year) per day per paying case, and then multiplying the result by the projected number cases that become payable during the year.


YEAR	<b>BENEFIT AMOUNT*</b>		
Year 1 Benefit	\$143,323		
Year 2 Benefit	\$148,195		
Year 3 Benefit	\$153,234		
Year 4 Benefit	\$158,444		
Year 5 Benefit	\$163,831		
Year 6 Benefit	\$169,401		
Year 7 Benefit	\$175,161		
Year 8 Benefit	\$181,117		
Year 9 Benefit	\$187,275		
Year 10 Benefit	\$193,642		
Year 11 Benefit	\$200,226		
Year 12 Benefit	\$207,033		

Table 5-32 below presents the projected dollar value benefits to be realized (from the FasterEnforcement Throughput Gains of 5.9 days) during each year of the CBA horizon:

### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

TABLE 5-32: POTENTIAL BENEFITS FROM SPEEDING UP ENFORCEMENT



### 5.5.5 Benefit #17: Speeding up Interstate

Table 5-33 below presents the key *Interstate*-related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times, along with the resultant Days gained:

	BENEFIT FACTOR		
1.	<ol> <li>Elapsed time gained by better automation of Interstate Case Setup (responding cases)</li> </ol>		
	TOTAL DAYS FOR SPEEDING UP INTERSTATE	0.53	

 TABLE 5-33: BENEFIT FACTORS FOR SPEEDING UP INTERSTATE

The following is a brief explanation of the above benefit factor:

Speeding up Interstate activities:

The automation of Interstate functionality in the new system is expected to cut down the elapsed time in setting up Interstate cases by 0.53 elapsed days.

Table 5-34 below presents the projected dollar value benefits to be realized (from the *Faster Interstate Throughput Gains* of 0.53 days) during each year of the CBA horizon:

YEAR	BENEFIT AMOUNT*		
Year 1 Benefit	\$5,997		
Year 2 Benefit	\$6,201		
Year 3 Benefit	\$6,412		
Year 4 Benefit	\$6,630		
Year 5 Benefit	\$6,855		
Year 6 Benefit	\$7,088		
Year 7 Benefit	\$7,329		
Year 8 Benefit	\$7,578		
Year 9 Benefit	\$7,836		
Year 10 Benefit	\$8,102		
Year 11 Benefit	\$8,378		
Year 12 Benefit	\$8,663		

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	<b>BENEFTT AMOUNT*</b>		
No benefits will be realized until the year of i	mplementation of an alternative		
Only 50% of calculated benefits will be realized during the first year of implementation			
75% of calculated benefits will be realized during the second year of implementation			
<ul> <li>Full value of calculated benefits will be realized for all years following the second year of implementation</li> </ul>			
 	No benefits will be realized until the year of i Only 50% of calculated benefits will be realiz 75% of calculated benefits will be realized du Full value of calculated benefits will be realiz mplementation		

### 5.5.6 Benefit #18: Speeding up Interface Enhancements

Table 5-35 below presents the key *Interface enhancements* related benefit factors (functionality and features of the new system) that would reduce activity completion elapsed times, along with the resultant Days gained:

	BENEFIT FACTOR	DAYS GAINED
1)	Elapsed time gained by obtaining birth certificates immediately for IV-A	0.09
	cases	
	TOTAL DAYS FOR SPEEDING UP INTERFACE ENHANCEMENTS	0.09

 TABLE 5-35: BENEFIT FACTORS FOR SPEEDING UP INTERFACE ENHANCEMENTS

The following is a brief explanation of the above benefit factor:

### Speeding up Interface enhancements:

The enhancements in obtaining IV-A birth certificate information sooner will have a small impact in the future CSE replacement system and is expected to cut down the elapsed time for obtaining birth certificate information for IV-A cases by 0.09 elapsed days.



YEAR	<b>BENEFIT AMOUNT*</b>		
Year 1 Benefit	\$1,032		
Year 2 Benefit	\$1,067		
Year 3 Benefit	\$1,104		
Year 4 Benefit	\$1,141		
Year 5 Benefit	\$1,180		
Year 6 Benefit	\$1,220		
Year 7 Benefit	\$1,261		
Year 8 Benefit	\$1,304		
Year 9 Benefit	\$1,349		
Year 10 Benefit	\$1,395		
Year 11 Benefit	\$1,442		
Year 12 Benefit	\$1,491		

Table 5-36 below presents the projected dollar value benefits to be realized (from the *Faster Interface enhancements Gains* of 0.09 days) during each year of the CBA horizon:

### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-36 POTENTIAL BENEFITS FROM SPEEDING UP INTERFACE ENHANCEMENTS



# 5.6 SPECIFIC 'DIRECT COST SAVINGS' BENEFITS

The following subsection describes and quantifies the benefit identified under the benefit category of *'Direct Cost Savings'*. For this benefit, the potential dollar savings during the baseline year, and the projected dollar savings for each year of the CBA time horizon, have been presented. For detailed Benefits Calculations, please refer to the <u>Benefits Analysis spreadsheet</u>.

Please note that though the benefit values have been presented for each year of the CBA time horizon, the extent of the projected benefit to be realized by an alternative in any given year will depend on *when* the alternative *is* implemented.

### 5.6.1 Benefit #19: Postage

The key benefit factors belonging to the category and the corresponding dollar value of the savings that are expected to be realized during the baseline year are presented Table 5-37 below.

BENEFIT FACTOR	SAVINGS
Eliminate cost of postage for mailings to NCP and CP	\$ 162,251
TOTAL POSTAL COST SAVINGS	\$162.251

 TABLE 5-37: BENEFIT FACTORS FOR POSTAL COST SAVINGS

Please note that the calculations for these benefit factors are in dollar amounts and are not translated into collections.

The following is a brief explanation of the above benefit factor:

## Cost of Mailing OCSS documents mailed through postal service:

OCSS mails approximately 450,696 documents annually. With the increasing use of and preference for electronic delivery of documents it is estimated that OCSS could save \$162,251. This estimate is based on a cost of \$0.60 for postage, paper and envelopes, and a 60% conversion to electronic delivery.



Table 5-38 below presents the projected dollar value benefits to be realized (from *Postal Cost Savings*) during each year of the CBA horizon:

YEAR	<b>BENEFIT AMOUNT*</b>		
Year 1 Benefit	\$170,363		
Year 2 Benefit	\$178,881		
Year 3 Benefit	\$187,825		
Year 4 Benefit	\$197,217		
Year 5 Benefit	\$207,077		
Year 6 Benefit	\$217,431		
Year 7 Benefit	\$228,303		
Year 8 Benefit	\$239,718		
Year 9 Benefit	\$251,704		
Year 10 Benefit	\$264,289		
Year 11 Benefit	\$277,504		
Year 12 Benefit	\$291,379		

### \* Note:

- (1) No benefits will be realized until the year of implementation of an alternative
- (2) Only 50% of calculated benefits will be realized during the first year of implementation
- (3) 75% of calculated benefits will be realized during the second year of implementation
- (4) Full value of calculated benefits will be realized for all years following the second year of implementation

 TABLE 5-38: POTENTIAL BENEFITS FROM POSTAL COST SAVINGS



# 5.7 APPLICATION OF THE CALCULATED BENEFITS

As recommended by the federal guideline for cost-benefit analysis, this Cost-Benefit Analysis assumes that each of the quantitative benefits will be fully realized by each Feasibility Study alternatives (*Custom Build and Adapt NJKiDS*) once the respective solution is fully implemented. This assumption is based on the fact that the end result of both alternatives is expected to fully meet the functionalities specified in the *Requirements Document*. Therefore, the cumulative dollar value benefits that will be experienced with each alternative during the cost-benefit time horizon will solely depend on the point in time at which the benefits will start accruing for a given alternative. In other words, the sooner an alternative is implemented, the larger the extent of cumulative benefits that can be derived from that alternative.



# **6 QUALITATIVE BENEFITS**

The InRHODES CSE replacement initiative is associated with some key benefits that cannot be objectively assigned a hard dollar value. These qualitative benefits are expected to have a positive impact on the operations and performance of the Rhode Island's Child Support Program.

The key qualitative benefits of replacing InRHODES CSE components with a contemporary system have been identified in the following sub-sections. These benefits supplement the quantitative benefits identified in section 5. As each InRHODES CSE replacement alternative that is being considered is expected to fully meet each of the requirements articulated in the *Requirements Document*, all of the identified qualitative benefits would apply to each InRHODES CSE replacement alternative. However, the measure of overall effectiveness of each benefit on the state's Child Support operations may vary with each alternative.

# 6.1 SOCIO-ECONOMIC IMPACT

The increased collections discussed under quantitative benefits, will translate into increased disbursement of child support payments to custodial parents and others. The socio-economic impact of this initiative is an important qualitative benefit.

# 6.2 IMPROVED QUALITY OF SERVICES

The InRHODES CSE replacement solution is expected to bring about improvements in the quality of services delivered to clients and other external stakeholders. The use of contemporary technology tools and IT best practices will also facilitate the delivery of more types of high-quality customer services.

The expanded use of the web, as a channel to facilitate additional information exchange with custodial parents, non-custodial parents and employers, will considerably enhance the ease and quality of communications and consequently improve the quality of Customer Services. This 2-way communication channel will give the external users the ability to:

- i. Find precise answers to specific inquiries.
- ii. Provide up-to-date status information.
- iii. File applications for child support services online.
- iv. Provide supplementary information (such as medical support questionnaire, etc.) online.
- v. File for NCP Services (where the putative father initiates the request for services).
- vi. Provide Locate-related information in a timely manner.

As this communications channel will be available on a 24x7 basis to the external users, it will facilitate effective and non-intrusive communications between the clients and their caseworkers and Customer Services personnel.



The quicker turnaround times and lower error rates imposed by this channel will also result in improved quality of services. In addition, the use of this web channel for inquiries will ensure consistency and accuracy of the State's responses.

The InRHODES CSE replacement solution will also include expanded IVR services, and the use of broadcasting for communication with clients. This will also contribute to improved customer services.

# 6.3 EFFECTIVE DELIVERY OF SERVICES

In addition to enhancing the quality of services provided, the InRHODES CSE replacement solution will also improve the effectiveness of operations and service delivery.

The specific areas that will contribute to improvements in service delivery include:

1. <u>Better Case Management</u> will help supervisors and managers to operate more pro-actively.

Performance-based dashboards will promptly alert supervisors about exceptional events, the potential for inability to meet goals, etc. These and other alerts will help the supervisors in taking timely action such as dynamically reallocating caseloads/activities among staff resources to meet exceptional/emergency situations, peak workloads, etc.

Similarly, the workers will be provided with an *Actionable Case List* and timely reminders and alerts regarding next actions, etc. to aid them in managing their caseloads effectively.

The effectiveness of Case Management will be further enhanced by the *Optimized Alerts* and easy lookup capabilities discussed under Quantitative Benefits.

2. <u>Maintenance of an audit trail</u> will allow workers to easily understand the events that led to the current status of a case, thereby increasing the effectiveness of their response to queries raised by clients. In addition, audit trails will also improve the capability of detecting both inadvertent and intentional errors and omissions and taking the necessary corrective action(s).

<u>3. Improvements in forms handling</u> (standardization of forms, stricter version control of forms by the system, the ability to reprint old forms, improved handling of packets of forms, etc.) will positively impact the consistency and quality of the information being communicated by OCSS to its clients and partners.

4. <u>*Prioritized and rules-based automatic locates*</u> (including performance-based locates) will improve the effectiveness of locates.

5. Rules-based automation and worker guidance regarding available and <u>recommended remedies</u> are expected to increase the effectiveness of enforcements.

6. The use of *electronic signatures* wherever possible (clients, judges, etc.) coupled with enhanced document imaging will augment workflow.



7. Better *data handling* features including data validation at source, powerful matching and duplicate detection capabilities, etc. to enhance both data quality and the effectiveness of locates and enforcement.

8. Rules-based <u>Case Closure</u> to take timely action to close cases that should no longer remain active.

# 6.4 IMPROVED USER EXPERIENCE

The current user interface of InRHODES includes a myriad of character-based screens with related pieces of information being spread across multiple screens. The unintuitive screens and navigation features require the user to memorize codes and next steps in order to use the system effectively.

In contrast, the InRHODES CSE replacement solution will include contemporary, logically organized and intuitive user interfaces that will allow workers to perform their jobs more easily. Its navigational features and guided data capture mechanisms will lead to better understanding of the system's capability. Consequently, a worker's performance will not be largely dependent on his/her understanding of the special features and quirks of the system. This will reduce the incidence of errors, omissions and rework on the part of the worker. Additionally, the ability to easily filter, sort and lookup pertinent information will also enhance user experience and effectiveness.

As mentioned under Quantitative Benefits, the contemporary and intuitive user interfaces are expected to significantly shorten learning curves. The qualitative aspect of this benefit is that it will make the organization more resilient and therefore better equipped to face the challenges associated with the attrition of human resources.

This improved user experience along with the increased effectiveness of service delivery will lead to high worker morale.

# 6.5 BETTER ACCESS TO MANAGEMENT/OPERATIONAL INFORMATION

The current InRHODES application lacks a comprehensive reporting capability. The InRHODES CSE replacement solution is expected to further improve this reporting capability by including versatile filter, sort and drilldown capabilities that will provide management, supervisors and workers with the ability to lookup up-to-date information that is essential in taking timely actions and enhancing program performance. The ability to provide detailed reports for financial reconciliation will enable the OCSS to resolve long standing issues related to financial variances across different financial reports.

# 6.6 IMPROVED INTERFACING AND DATA EXCHANGE CAPABILITY

To support the State's Child Support operations, OCSS regularly exchanges information with a number of Federal agencies and State agencies within and outside Rhode Island.



The InRHODES CSE replacement solution will be based on service-oriented architecture patterns and will leverage contemporary technologies such as web services to facilitate easier and more up-to-date data exchange mechanisms. While some of the agencies with whom data is being exchanged may not be willing to change the current data exchange methods, the InRHODES CSE replacement solution will certainly have the capability to leverage contemporary technologies to either publish web services for use by other agencies or subscribe to the web services published by one or more of these agencies.

The use of web services will also allow the State to explore the possibilities of real-time/near realtime information exchange, should such system interfaces be needed and/or be agreeable to the exchanging partner. Also, the articulated functional requirements set identifies multiple new avenues and methods for improved information exchanges with new (future) as well as existing partner agencies. The inclusion of such external interfaces is expected to enhance program performance. In addition, the new system will be able to leverage existing DHS-provisioned web services.

The ability that the new system will have to quickly leverage relevant information sources as and when they become available to the program will be a high-value qualitative benefit.

# 6.7 MORE COMPREHENSIVE AND FLEXIBLE TECHNOLOGY SOLUTION

The core components of InRHODES lack flexibility, maintainability and extensibility.

The future CSE replacement system is expected to incorporate all of the business rules associated with each requirement that has been identified in the *Requirements Document*. This will make the new solution (a) more comprehensive; (b) overcome the current functional weaknesses, and (c) easier to enhance and modify.

The new solution is also expected to be architected for change. In other words, its design will include mechanisms to easily incorporate changes in business rules. Table-driven functionality will replace the current hard-coded rules and parameters. The solution will be integrated with a Business Rules engine that will allow Business Analysts to define, implement and test certain types of changes.

The new solution will also offer the workers the flexibility to set certain individual preferences that would aid in optimizing their own performance.

# 6.8 BETTER EQUIPPED TO RESPOND TO STAKEHOLDER NEEDS

The inflexibility of the current InRHODES system leads to long release cycles with too much time being required for testing. This makes it very difficult to implement either *quick-win* enhancements or mandatory time-bound changes/additions (such as changes in calculation rules, etc.).



A contemporary solution that starts with a baseline of all of the current business requirements and business rules and offers a flexible design that can accommodate change will contribute significantly to the Agency's ability to respond to legislative and regulatory changes, federal mandates and internal enhancement requests.

This capability is crucial for efficiently and effectively supporting the child support program that has widespread impact and must swiftly respond to economic and political changes that may occur over time.

# 6.9 IMPROVED QUALITY OF SYSTEM SUPPORT

The InRHODES CSE replacement solution is will employ open, non-proprietary, contemporary and well-tested architecture and platforms. These will make it easier to effectively analyze the impact of change, as well as to carry out and test changes – thereby improving the quality of application support.

# 6.10 LOWER MAINTENANCE COSTS AND RISKS

Each of the InRHODES CSE replacement alternatives may result in a lower total cost of ownership as compared to the alternative of maintaining *Status Quo* depending upon the cost allocation.

It is difficult and very time consuming to carry out changes to the core InRHODES CSE component. The difficulties in incorporating changes are compounded by the need to carry out extensive, detailed and tedious regression testing. Due to staffing shortages user acceptance testing is not always thoroughly performed. As a result "Bugs" are later discovered in production. In addition to the high cost of testing, the consequences of insufficient regression testing could be dire and widespread.

With (a) fewer and fewer COBOL programming resources being available; (b) the extensive resource utilization required to carry out and test changes; and (c) fewer agencies to share mainframe costs with, the costs and the risks of maintaining *Status Quo* are expected to be very high.

The total cost of ownership of the InRHODES CSE replacement solution may be lower for each aspect of system lifecycle costs – whether it is hardware purchases, software licenses, operations support or personnel costs. The integration of rules-based engines will further lower these costs because it will allow certain portions of the system to be maintained by less expensive internal resources and Business Analysts.

In addition to lowering the maintenance and support costs, the new solution is also associated with a lower risk in terms of:

- Assurance of the availability of technical personnel (in the long term) to maintain the system.
- The use of supported and contemporary third party products
- Ability for prompt and more accurate recovery in the event of a catastrophe.



# 6.11 DISASTER RECOVERY

The InRHODES CSE replacement solution will be built on contemporary server platforms. The use of open contemporary platforms makes it easier to implement a more comprehensive Disaster Recovery Plan because:

- i. Server platforms are less expensive to procure
- ii. It is easier to create an exact replica of the entire server environment
- iii. Contemporary server platforms have tools that support near real-time data replication and the creation of hot sites.
- iv. The IES system has a disaster recovery plan that OCSS can leverage.

# 6.12 ACCOUNTABILITY

The future CSE replacement system is expected to increase the agency's accountability because it will include:

- 1. A comprehensive financial audit trail to account for all financial transactions
- 2. Functionality for enhanced safeguard mechanisms to protect each data item that is marked as confidential.
- 3. Mechanisms for alerting supervisors regarding unusual activities such as frequent address changes
- 4. Stringent security measures to prohibit unauthorized access.



# 7 STATUS QUO

For this analysis, the Status Quo is defined as the continuation of automation support using InRHODES and its auxiliary applications, and making ongoing investments to suitably enhance the entire application suite to meet the changing needs of the IV-D program over the time horizon covered by this CBA.

# 7.1 KEY ASPECTS OF THE STATUS QUO

InRHODES is a mainframe application running on a IBM 9672-R24 processor hosted on the DHS Mainframe within the Department of Information Technology (DoIT) data center in Johnston, Rhode Island. The mainframe system software includes OS/390, VTAM, CICS, COBOL, TSO, and RACF. The application software includes an ADABAS hierarchical database, Natural, Predict, Easytrieve, and Entire Connection.

The InRHODES application is written in COBOL. Contractor staff supports the InRHODES application. In addition to providing functional support for OCSS, InRHODES also provides functional support to all the other DHS computer systems. In other words, DHS has always had an integrated computer system for all of its functional agencies.

The Feasibility & Alternatives Analysis report describes different aspects of the Status Quo in great detail. It also presents an assessment of the functional and technical gaps between InRHODES CSE components and the requirements articulated in the *Requirements Document*, along with its strengths and weaknesses, and the advantages and risks of continuing to maintain status quo. Presented in table 7-1 below are the key aspects of this detailed assessment that are relevant to this Cost-Benefit Analysis.

ASPECT	VALUE		
FUNCTIONAL & TECHNICAL GAPS	57.5% (of the requirements set are not fully met)		
Technical Gaps	44% (of the requirements set are not fully met)		
Size	N.A. InRHODES codes supports multiple DHS systems		
DEVELOPMENT & IMPLEMENTATION EFFORT	N.A		
DEVELOPMENT & IMPLEMENTATION TIMEFRAME	N.A		
DEVELOPMENT & IMPLEMENTATION COSTS	N.A		
KEY ASSUMPTION FOR COMPUTING COST	N.A		
Applicable benefits	None		
Risk Factor	High to Extreme		

TABLE 7-1: KEY ASPECTS OF THE 'STATUS QUO' ALTERNATIVE

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# 7.2 Assumptions

The first major assumption with regard to the CBA of the *Status Quo* is that it will be possible to maintain InRHODES as an operational system throughout the CBA time horizon. The second major assumption is that the IES system will be implemented in July of 2016 and that the costs of running InRHODES will shift to OCSS when other DHS Agencies are no longer being supported by InRHODES.

# 7.3 COSTS ASSOCIATED WITH THIS ALTERNATIVE

The total cost of maintaining the *Status Quo* is the sum of the present values of the projected costs to be incurred during each year of the CBA time horizon.

Some of the projected costs are expected to recur periodically, while others are not. This analysis separates costs into Recurring Costs and Non-Recurring Costs. The following two subsections present the total cost projections under each of these two categories.

# 7.3.1 Non-Recurring Costs

Non-recurring costs include all one-time costs associated with this alternative. Since maintaining status quo, by its very definition does not include any special additional costs, there are no non-recurring costs associated with the Status Quo.

## 7.3.2 Baseline Recurring Costs

Recurring costs include all costs that are expected to be regularly incurred on a periodic basis. There are two significant factors that are impacting the Recurring Costs for OCSS. The first is the potential transition of the other DHS programs to the new Integrated Eligibility System (IES) and the second is that the systems running on the mainframe in the Data Center are moving off the mainframe to server based systems. For the purposes of this report, SymbioSys is using a transitional cost allocation approach provided through meetings with DHS. The cost allocation leads to the costs of FFY 2018 providing a better understanding of the costs OCSS will incur during the CBA time period. Prior to determining the projected recurring costs for the *Status Quo*, baseline costs were compiled using OCSS's Federal Fiscal Year 2014 cost data.

The following table presents a summary of the baseline recurring costs for each of the cost components that contributed to InRHODES 'Recurring Costs' in FFY 2014.



COST CATEGORY	Dollar Amount
1. Direct Personnel – DOIT	\$275,728
2. Contractor Services (Application Maintenance Contractor)	\$542,168
3. Hardware/Software – Local	\$148,312
TOTAL	\$966,208

TABLE 7-2: INRHODES STATUS QUO COSTS FOR FFY 2014

The projected Status Quo costs for FFY 2018 provide a better understanding of the

cost that OCCS will bear once the IES system has fully transitioned for DHS.

COST CATEGORY	Dollar Amount
Direct Personnel – DOIT	\$298,457
Contractor Services (Application Maintenance Contractor)	\$1,432,061
Hardware/Software – Local	\$166,926
Hardware – Mainframe	\$211,696
Software – Mainframe	\$190,160
TOTAL	\$2,299,300

 TABLE 7-3: INRHODES STATUS QUO COSTS FOR FFY 2018

As can be seen from the table above, contractor services is the largest category, the allocation of mainframe hard ware and software is now being allocated to OCSS.

### 7.3.3 Projected Recurring Costs

For the most part, the projections were made by applying an index or an estimate for the expected increase for each cost category.

The following is a description of the cost components that comprise the recurring costs for the *Status Quo* alternative:

- <u>Direct Personnel – DOIT:</u>

The State of Rhode Island has a statewide Agency – DOIT that provides IT support to various state Agencies. This is the costs for direct support of OCSS functions. It includes the following



components: Salary, retirement, FICA, Medical insurance, dental insurance, and vision insurance, a fringe benefit assessment, and retiree health insurance.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year (FFY 2015) annual cost of \$275,728. These costs increase from FFY 2010 to FFY 2013 before dropping slightly in FFY 2014. The 3-year average increase in these costs is 1.2%. The present economic environment is one with modest cost increases for personnel. However, for this analysis the growth rate for Direct DOIT – Personnel is forecasted to increase at a slightly higher 2% increase.

### - <u>Contractor Services</u>

The InRHODES Application is supported by a contractor - Northrop Grumman. This is the total cost of maintaining InRHODES by the application maintenance contractor. Northrop provides Knowledge Transfer, Project Management, Application Modification, Application Support, Turnover Services, and Production Control for the InRHODES system.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on the cost allocation that will applied with the implementation of the IES system. This breakdown is shown in the spreadsheet *State FY to FFY*. The starting amount for this cost category is \$1,390,350. A growth rate of 3% was applied to FFY 2020 through 2026 only, as the current contract, (covering FFY 2016 through 2019), with the InRHODES M & O vendor already includes a 3% growth factor.

### Hardware/Software - Local

This is the total cost of the hardware and software equipment that OCSS presently has at the main office. This cost includes imaging software, imaging hardware and other PC equipment and related costs.

The FFY 2014 cost of \$148,312 has been used as the baseline for future cost projections for this cost component. These costs have varied widely from FFY 2010 to FFY 2015. For this analysis, a growth rate of 3% will be used for the CBA time horizon which is lower than the 3-year and 5-year average for this cost category but seems to be a reasonable estimate.

### - Mainframe Costs - Central

This is the total cost for support of the mainframe hardware and related costs. The software costs included in this category are for: Oracle, Natural/ADABAS, Attachmate, Elixir, Passport, Ipswirch, Cyberfusion, and Outlook/Office 365.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on the *State to Northrop Mainframe Software spreadsheet* and the *Child Support Northrop and Mainframe Costs* v4.0. The *State to Northrop Mainframe Software spreadsheet* takes the hardware figure from the



*Child Support Northrop and Mainframe Costs v4.0* sheet adjusted from a state fiscal year to a federal fiscal year basis for FFY 2017, 2018, and 2019. In FFY 2017 3% of the total cost will be allocated to OCSS, and 60% from FFY 2018 onwards. From FFY 2020 onwards a 3% growth factor was applied for the CBA time horizon.

### - Software Costs – Central

This is the total cost for support of the mainframe software and related costs.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on the *State to Northrop Mainframe Software spreadsheet* and the *Child Support Northrop and Mainframe Costs v4.0.* The *State to Northrop Mainframe Software spreadsheet* takes the figures from the *Child Support Northrop and Mainframe Costs v4.0* sheet takes the software cost figure cost and adjusts it from a state fiscal year to a federal fiscal year basis for FFY 2017, 2018, and 2019. In FFY 2017 3% of the total cost will be allocated to OCSS, and 60% from FFY 2018 on. From FFY 2020 forward a 2% growth factor was applied for the CBA time horizon.

Table 7-3 below summarizes the total projected recurring costs (in thousands) that are expected to be incurred for the *Status Quo* alternative over the entire 12-year CBA time horizon. (Some figures may not add due to rounding).

YEAR (20)	DIRECT Personnel - DOIT	<b>CONTRACTOR</b> <b>SERVICES</b>	HARDWARE/SOF TWARE - LOCAL	MAINFRAME COSTS - CENTRAL	SOFTWARE COSTS – CENTRAL	TOTAL Projected Recurring Costs
15	\$281,243	\$558,433	\$152,761	\$0	\$0	\$992,437
16	\$286,867	\$575,186	\$157,344	\$0	\$0	\$1,019,398
17	\$292,305	\$1,390,350	\$162,065	\$58,605	\$54,671	\$1,958,295
18	\$298,457	\$1,432,061	\$166,926	\$211,696	\$190,160	\$2,299,300
19	\$304,426	\$1,471,362	\$171,934	\$162,318	\$142,620	\$2,252,660
20	\$310,515	\$1,545,813	\$177,092	\$167,187	\$145,473	\$2,346,080
21	\$316,725	\$1,576,729	\$182,405	\$172,203	\$148,382	\$2,396,444
22	\$323,059	\$1,608,264	\$187,877	\$177,369	\$151,350	\$2,447,919
23	\$329,520	\$1,640,429	\$193,514	\$182,690	\$154,377	\$2,500,530
24	\$336,111	\$1,673,238	\$199,319	\$188,171	\$157,464	\$2,554,303
25	\$342,833	\$1,706,703	\$205,298	\$193,816	\$160,614	\$2,609,264
26	\$356,546	\$1,740,837	\$211,457	\$199,630	\$160,826	\$2,672,297
	\$3,778,907	\$16,919,405	\$2,167,994	\$1,713,684	\$1,468,937	\$26,048,927

 TABLE 7-3: SUMMARY OF RECURRING COSTS OVER THE COST-BENEFIT HORIZON FOR 'STATUS QUO'

## 7.3.4 Present Value of Costs

All of the costs present above are based on the current dollar value of each cost component. To reflect the time value of money, these costs are then discounted to their present value using a 7% value factor.

The table on the following page shows the non-recurring, recurring, and total cost data adjusted with the 7% value factor.



YEAR (20)	NON-RECURRING COSTS	RECURRING COSTS	TOTAL PROJECTED COSTS FOR 'STAUS QUO'	PRESENT VALUE FACTOR	TOTAL PRESENT VALUE COSTS FOR 'STAUS QUO'	CUMULATIVE TOTAL PROJECTED COSTS FOR 'STAUS QUO'
15	\$0	\$992,437	\$992,437	0.9667	\$959,389	\$959,389
16	\$0	\$1,019,398	\$1,019,398	0.9035	\$921,026	\$1,880,415
17	\$0	\$1,958,295	\$1,958,295	0.8444	\$1,653,585	\$3,533,999
18	\$0	\$2,299,300	\$2,299,300	0.7892	\$1,814,608	\$5,348,607
19	\$0	\$2,252,660	\$2,252,660	0.7376	\$1,661,562	\$7,010,169
20	\$0	\$2,346,080	\$2,346,080	0.6893	\$1,617,153	\$8,627,322
21	\$0	\$2,396,444	\$2,396,444	0.6442	\$1,543,789	\$10,171,111
22	\$0	\$2,447,919	\$2,447,919	0.6021	\$1,473,892	\$11,645,003
23	\$0	\$2,500,530	\$2,500,530	0.5626	\$1,406,798	\$13,051,802
24	\$0	\$2,554,303	\$2,554,303	0.5258	\$1,343,052	\$14,394,854
25	\$0	\$2,609,264	\$2,609,264	0.4914	\$1,282,192	\$15,677,046
26	\$0	\$2,672,297	\$2,672,297	0.4593	\$1,227,386	\$16,904,432
TOTAL	\$0	\$26,048,927	\$26,048,927		\$16,904,432	\$16,904,432

TABLE 7-4: PRESENT VALUE OF THE COSTS FOR 'STATUS QUO'

# 7.4 BENEFITS ASSOCIATED WITH THIS ALTERNATIVE

It is assumed that no additional benefits will be associated with the *Status Quo*. This is because the benefits associated with each of the other scenarios are the additional benefits to be accrued <u>over</u> <u>and above</u> the benefits resulting from the *Status Quo*.



# 8 CUSTOM BUILD

The Custom Build Option for a future CSE replacement system refers to implementing a comprehensive custom-built solution that meets all of the functional and technical requirements articulated in the *Requirements* document. While this approach will not necessarily leverage prebuilt software components from elsewhere, it may draw upon the conceptual designs and industry best practices adopted by other contemporary CSE systems and similar systems.

# 8.1 KEY ASPECT S OF THE CUSTOM BUILD ALTERNATIVES

The Feasibility & Alternatives Analysis report describes this alternative in greater detail and also presents an assessment of the functional and technical fit of this alternative, the effort estimates and anticipated timelines to complete development and implementation of all facets of the solution, development and implementation costs, and risks associated with this effort.

ASPECT	VALUE				
Functional Gaps	None (will be fully met)				
TECHNICAL GAPS	None (will be fully met)				
BUSINESS GAPS	None (will be fully met)				
Size	1.578,305 SLOC (Standard Lines of Code)				
	2.35,122 UFP (Unadjusted Function Points)				
	3.45,307 FP (Adjusted Function Points)				
DEVELOPMENT & IMPLEMENTATION EFFORT	2,530 person months*				
DEVELOPMENT & IMPLEMENTATION TIMEFRAME	40 months*				
DEVELOPMENT & IMPLEMENTATION COSTS	\$47,307,747*				
KEY ASSUMPTION FOR COMPUTING COST	Team Composition				
	(90% vendor staff; 10% State staff				
	Blended Labor Rate				
	\$116.90/hours; \$18,698 per month				
	Labor Rate Components				
	Vendor: \$125/hour; State staff: 44/hour				
Applicable benefits	All				
Risk Factor	High to Extreme				
TABLE 8-1: KEY ASPECTS OF THE 'CUSTOM BUILD' ALTERNATIVE					

Presented in table 8-1 below are the key aspects of this detailed assessment that are relevant to this Cost-Benefit Analysis.

\*Using the weighted average of optimistic, most likely & pessimistic COCOMO-II estimates

RI OCSS & SymbioSys Solutions, Inc. January 28, 2016

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# 8.2 Assumptions

The following are some of the key assumptions on which the *Cost-Benefit Analysis* for this alternative is based:

As mentioned in section 4.4, it is assumed that by August 2016 OCSS will have obtained all necessary funding approvals; issued RFP's for DDI and IV&V services; and selected the vendors.

Consequently, it is assumed that:

- 1. The actual *Development and Implementation* project for the *Custom Build* will commence in August 2016.
- 2. Any costs associated with *Development and Implementation* of the *Custom Build* will be incurred only from the last two months of FFY 2016 onwards through the duration of this effort.
- 3. No benefits will accrue until completion of the actual *Development and Implementation* project.
- 4. All of the quantitative benefits identified in section 5 will be realized once the *Custom Build* solution is operational. However, only 50% of the benefit value will be realized during the first year of operations and 75% of the benefit value will be realized in the second year. The full extent of the benefit value will be realized during each succeeding year thereafter.
- 5. The hardware and software costs for the *Custom Build* solution are based on the costs incurred for the DHS IES System.
- 6. Growth factors have not been applied to FFY 2016 through 2019 as the contract awarded to the successful bidder is expected to be controlled by a firm fixed price contract throughout this period.



# 8.3 COSTS ASSOCIATED WITH THIS ALTERNATIVE

The total cost of the alternative of implementing a custom-built system is the sum of the present values of the projected costs to be incurred with this alternative during each year of the CBA time horizon.

Some of the projected costs are expected to recur periodically, while others are not. This analysis separates costs into Recurring Costs and Non-recurring Costs. The following 2 sub-sections present total cost projections under each of these two cost categories. The third sub-section computes the present value of the sum of the recurring and non-recurring costs.

### 8.3.1 Non-Recurring Costs

Non-recurring costs include all one-time costs associated with this alternative. The costs include:

a. Staff Augmentation

In the event that OCSS is unable to provide sufficient staff for the project. The staff augmentation cost category has been added. The cost in this cost category is the difference in the hourly cost for contractor staff (\$90.00 per hour) versus state staff (\$44.00 per hour) times the number of staff being augmented times the number of work hours in a year (1620).

This cost is expected to be incurred during FFY 2016 thru FFY 2020. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$298,080.

b. <u>Hardware Purchase</u>

This is the cost of procuring the hardware components necessary to implement and support the *Custom Build* solution.

This cost is expected to be incurred during FFY 2017 and FFY 2019. In FFY 2017, 25% of the cost is applied to set up the development and test environments. The remainder of the cost is allocated in FFY 2019. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$399,712.

### c. Software Purchase

This is the cost of procuring the software components necessary to implement and support the *Custom Build* solution.

This cost is also expected to be incurred during FFY 2017 and FFY 2019. In FFY 2017, 25% of the cost is applied to set up the development and test environments. The remainder of the cost is allocated in FFY 2019. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$953,219.



### d. Application Development and Implementation

This is the total cost of services associated with development and implementation of the *Custom* Build solution.

This cost is expected to be incurred during years FFY 2017 to FFY 2020. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$39,106,747.

This cost is based on the Cost Estimation carried out using the COCOMO II software. Please refer to section 8.5.2.2 of the Feasibility & Alternatives Analysis report for more details about these estimates.

#### Conversion е.

This is the total cost of services associated with converting and migrating the data in CSE into the database associated with the *Custom Build* solution.

This cost is expected to be incurred during FFY 2017 to FFY 2019. One-third of the cost is allocated to each FFY. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$8,200,000.

This cost is based on the Cost Estimation carried out using the COCOMO II software. Please refer to sections 8.5.2.2 of the Feasibility & Alternatives Analysis report for more details on these estimates.

f. Rollout

This is the total cost of implementing the *Custom Build* solution.

This cost is expected to be incurred during FFY 2020. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$1,206,320. Since this cost is not part of the COCOMO estimates – it has been based on expert judgment rollout costs.

q. PM/QA/IV&V services

This is the total cost of services associated with external Project Management, Quality Assurance, and Independent Verification & Validation to ensure that a quality product is being delivered based on agreed-upon timelines and other expectations.

This cost is also expected to be incurred during FFY 2017 to FFY 2020. This cost is included in the COCOMO estimate and are included as application development and implementation figures.

h. Training

This is the total cost of services associated with developing training materials and training staff in the Custom Build solution. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$257,600. This cost is not included in the COCOMO estimates



and is based on the expert judgment estimate. This cost is expected to be incurred during FFY 2020.

### i. IES Vendor

This cost is the cost for the existing IES vendor to provide: (1) knowledge transfer of the base IES system and the technology components, and lend technical support when necessary, (2) be a resource to the CSE vendor to answer questions and assist with troubling shooting, (3) supporting integration testing, and (4) any other supporting activities.

The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$5,736,600.

This cost is also expected to be incurred during FFY 2016 to FFY 2020.

Table 8-2 summarizes the total projected non-recurring costs that are expected to be incurred for the *Custom Build* alternative over the entire 12-year CBA time horizon.

	COST CATEGORY	AMOUNT	INCURRED DURING
a.	Staff Augmentation	\$993,600	FFY 2016-2020
b.	Hardware Purchase	\$399,712	FFY 2017 & 2019
C.	Software Purchase	\$953,219	FFY 2017 & 2019
d.	Application development & implementation	\$39,106,747	FFY 2016-2020
e.	Conversion	\$8,200,000	FFY 2017-2019
f.	Rollout	\$1,206,320	FFY 2020
g.	PM/QA/IV&V services	Included in	
		Application	
		Development	FFY 2016-2020
h.	Training	\$257,600	FFY 2020
i.	IES Vendor	\$5,736,600	FFY 2016-2020
	TOTAL NON-RECURRING COSTS	\$56,853,978	

TABLE 8-2: TOTAL NON-RECURRING COSTS

As can be seen from the table 8-2 above, *Application development & implementation* costs are the largest cost component of the non-recurring costs. At \$39.1 million of the \$56.8 million total, this cost component accounts for 69% of the total non-recurring cost. Conversion costs are the second largest component of the non-recurring costs, accounting for \$8.2 million of the 56.8 million total.



Please refer to the section 8.5.2.2 of the *Feasibility & Alternatives Analysis* Report for details on the data, methods, and tools used to estimate these two cost components.

### 8.3.2 Recurring Costs

Recurring costs include all the costs associated with this alternative that are expected to be regularly incurred on a periodic basis. The component costs included in the recurring cost of the *Custom Build* alternative are:

### a. <u>Direct Personnel – DOIT:</u>

This is the cost for direct support of OCSS functions by DOIT. This cost includes the following components: Salary, retirement, FICA, Medical insurance, dental insurance, and vision insurance, a fringe benefit assessment, and retiree health insurance.

For FFY 2020 to FFY 2026 the full value of this cost, if incurred, is expected to be the same as that projected for the Status Quo during that year - i.e., the cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year (FFY 2014) annual cost of \$292,605 and an annual growth factor of 2%. In FFY 2020, 83% of the costs are applied to reflect the implementation of the *Custom Build* solution during that year.

### b. Contractor Services

The InRHODES Application is supported by a contractor - Northrop Grumman. It is assumed that the future CSE replacement system will also be supported by a contractor.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on the cost allocation that will be applied with the implementation of the IES system. The cost is calculated as 5% of the total development cost. In FFY 2020 this cost will be 50% of the cost and 100% thereafter.

## c. <u>Hardware/Software - Local</u>

This is the total cost of hardware and software equipment that OCSS presently has at the main office. This cost includes imaging software, imaging hardware and other PC equipment and related costs.

This cost will continue with the future CSE replacement system. The costs for this category will be the Status Quo Costs for the FFY reduced for the future CSE replacement system having centralized imaging equipment.

d. Server Costs - Central



The InRHODES CSE replacement solution will be server based. The recurring server costs are calculated as the annual server maintenance cost of \$102,202 times the percent allocated to OCSS times the annual growth factor of 3%.

e. Software Costs - Central

This is the total cost for support of the server related software costs for the InRHODES CSE replacement solution. The software costs are calculated as the annual software maintenance costs of \$1,150,173 times the percent allocated to OCSS times the annual growth factor of 3%.

Table 8-3 below summarizes the total projected recurring costs (in thousands) that are expected to be incurred for the Custom Build alternative over the entire 12-year CBA time horizon. (Some figures may not add due to rounding).

YEAR (20)	DIRECT PERSONNEL – DOIT	<b>CONTRACTOR</b> <b>SERVICES</b>	HARDWARE/SOF TWARE – LOCAL	MAINFRAME Costs - Central	SOFTWARE COSTS – CENTRAL	TOTAL Projected Recurring Costs
15	\$0	\$0	\$0	\$0	\$0	\$0
16	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$0	\$0	\$0	\$0	\$0
18	\$0	\$0	\$0	\$0	\$0	\$0
19	\$0	\$0	\$0	\$0	\$0	\$0
20	\$258,762	\$1,412,168	\$73,788	\$13,420	\$145,248	\$1,903,387
21	\$316,725	\$2,909,067	\$91,203	\$16,587	\$177,784	\$3,511,365
22	\$323,059	\$2,996,339	\$93,939	\$17,085	\$181,339	\$3,611,761
23	\$329,520	\$3,086,229	\$96,757	\$17,597	\$184,966	\$3,715,070
24	\$336,111	\$3,178,816	\$99,659	\$505,372	\$1,350,635	\$5,470,592
25	\$342,833	\$3,274,180	\$102,649	\$18,669	\$192,439	\$3,930,770
26	\$356,546	\$3,372,405	\$105,729	\$19,229	\$196,288	\$4,050,197
	\$2,263,557	\$20,229,203	\$663,724	\$607,959	\$2,428,698	\$26,193,142

TABLE 8-3: SUMMARY OF RECURRING COSTS OVER THE COST-BENEFIT HORIZON FOR 'CUSTOM BUILD'



### 8.3.3 Present Value of Costs

All of the costs present above are based on the current dollar value of each cost component. To reflect the time value of money, these costs are then discounted to their present value using a 7% value factor.

The table below shows the non-recurring, recurring, and total cost data adjusted with the 7% value factor.

YEAR (20)	NON-RECURRING COSTS	RECURRING COSTS	TOTAL PROJECTED COSTS FOR 'CUSTOM BUILD	Present Value Factor	TOTAL PRESENT VALUE COSTS FOR CUSTOM BUILD	CUMULATIVE TOTAL PROJECTED COSTS FOR 'SCUSTOME BUILD'
15	\$0	\$0	\$0	0.9667	\$0	\$0
16	\$2,100,627	\$0	\$2,100,627	0.9035	\$1,897,917	\$1,897,917
17	\$15,948,502	\$0	\$15,948,502	0.8444	\$13,466,915	\$15,364,832
18	\$16,976,126	\$0	\$16,976,126	0.7892	\$13,397,559	\$28,762,390
19	\$17,990,824	\$0	\$17,990,824	0.7376	\$13,270,032	\$42,032,422
20	\$3,837,719	\$1,903,387	\$5,741,106	0.6893	\$3,957,344	\$45,989,766
21	\$0	\$3,511,365	\$3,511,365	0.6442	\$2,262,021	\$48,251,788
22	\$0	\$3,611,761	\$3,611,761	0.6021	\$2,174,641	\$50,426,429
23	\$0	\$3,715,070	\$3,715,070	0.5626	\$2,090,098	\$52,516,527
24	\$0	\$5,470,592	\$5,470,592	0.5258	\$2,876,437	\$55,392,964
25	\$0	\$3,930,770	\$3,930,770	0.4914	\$1,931,581	\$57,324,545
26	\$0	\$4,050,197	\$4,050,197	0.4593	\$1,860,256	\$59,184,801
TOTAL	\$56,853,798	\$26,193,142	\$83,046,940		\$59,184,801	\$59,184,801

TABLE 8-4: PRESENT VALUE OF THE COSTS FOR 'CUSTOM BUILD'



# 8.4 **BENEFITS OF IMPLEMENTING THIS ALTERNATIVE**

As presented in section 8.1, the estimated elapsed time (schedule) for completion of development and implementation of the *Custom Build* solution is 40 months. Based on this schedule and the quantitative and qualitative benefits identified in sections 5.3 and 6, this section assesses the expected value of the quantitative benefits and the potential impact of the qualitative benefits from the *Custom Build* alternative during the CBA time horizon.

## 8.4.1 Quantitative Benefits

The total value of the quantitative benefits to be derived from the *Custom Build* alternative is the present value of the sum of the projected benefits to be accrued with this alternative during each year of the CBA time horizon.

The specific calculations for the benefits that could be realized during each year of the CBA time horizon were developed in Section 5 - Quantitative Benefits. Based on the estimated implementation schedule for this alternative, the following are some of the highlights of the quantitative benefits associated with the *Custom Build* alternative.

- Benefits will be derived from this alternative from FFY 2020 when the *Custom Build* alternative is fully implemented.
- Benefits derived during FFY 2020, the first year of production, are expected to be reduced to 50% of the projected full benefits for that year.
- Benefits derived during FFY 2021, the second year of production, are expected to be reduced to 75% of the projected full benefits for that year.
- After FFY 2022, the full extent of the Benefits will be realized for each year thereafter (i.e., the value of the benefits accrued during each of FFY 2022 through FFY 2026 will be 100% of the projected potential benefits for the respective years).
- The current value of the total potential benefits accruing from the *Custom Build* Alternative is *\$182,303,956*.
- The present value of the total benefits (benefits adjusted for the 7% value factor) associated with this alternative is *\$100,382,705*



Table 8-5 below presents a summary of the quantitative benefits associated with the *Custom Build* alternative.

YEAR	ANNUAL BENEFITS		CUMULATIVE BENEFITS	
	PROJECTED	PRESENT VALUE	PROJECTED	PRESENT VALUE
	BENEFITS	OF BENEFITS	BENEFITS	OF BENEFITS
1 – FFY 2015	\$0	\$0	\$0	\$0
2 – FFY 2016	\$0	\$0	\$0	\$0
3 – FFY 2017	\$0	\$0	\$0	\$0
4 – FFY 2018	\$0	\$0	\$0	\$0
5 – FFY 2019	\$0	\$0	\$0	\$0
6 – FFY 2020	\$13,020,679	\$8,975,154	\$13,020,679	\$8,975,154
7 – FFY 2021	\$20,197,683	\$13,011,347	\$33,218,362	\$21,986,502
8 – FFY 2022	\$27,849,525	\$16,768,199	\$61,067,887	\$38,754,700
9 – FFY 2023	\$28,800,244	\$16,203,017	\$89,868,131	\$54,957,718
10 – FFY 2024	\$29,783,480	\$15,660,154	\$119,651,611	\$70,617,872
11 – FFY 2025	\$30,800,347	\$15,135,290	\$150,451,958	\$85,753,162
12 – FFY 2026	\$31,851,999	\$14,629,623	\$182,303,956	\$100,382,785
Total	\$182,303,956	\$100,382,785	\$182,303,956	\$100,382,785

 TABLE 8-5: SUMMARY OF BENEFITS FOR THE 'CUSTOM BUILD' ALTERNATIVE

### 8.4.2 Qualitative Benefits

The *Custom Build* solution will yield each of the qualitative benefits identified in section 6. The extent of impact that the *Custom Build* solution will have with respect to each of these qualitative benefits have been presented in the following table.

QUALITATIVE BENEFIT	AREA OF IMPACT	EXTENT OF IMPACT
<ul> <li>Socio Economic Impact</li> </ul>	- Program Accountability	Medium
<ul> <li>Improved quality of service</li> </ul>	- Delivery of Services	High



<ul> <li>Program Effectiveness</li> <li>Delivery of Services</li> <li>Program Effectiveness</li> </ul>	Very High
<ul><li>Delivery of Services</li><li>Program Effectiveness</li></ul>	
- Program Effectiveness	
_	Very High
- Performance Measures	
- Efficiency gains	
- Delivery of Services	
- Program Performance	Very High
<ul> <li>Program Effectiveness</li> </ul>	
- Efficiency gains	
<ul> <li>Program Effectiveness</li> </ul>	Very High
- Efficiency gains	
- Delivery of Services	
<ul> <li>Program Effectiveness</li> </ul>	Very High
- Efficiency gains	
- Delivery of Services	
- System Maintainability	
<ul> <li>Program Accountability</li> </ul>	Very High
- Program Performance	
- System Maintainability	Very High
- Program Accountability	Very High
- System Maintainability	
- Program Accountability	Very High
- Program Accountability	Very High
	Performance MeasuresEfficiency gainsDelivery of ServicesProgram PerformanceProgram EffectivenessEfficiency gainsProgram EffectivenessEfficiency gainsDelivery of ServicesProgram EffectivenessEfficiency gainsDelivery of ServicesProgram EffectivenessEfficiency gainsDelivery of ServicesSystem MaintainabilityProgram PerformanceSystem MaintainabilityProgram AccountabilityProgram Accountability

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# 8.5 COST-BENEFIT ANALYSIS VALUATION FOR THIS ALTERNATIVE

The key metrics for the *Custom Build* alternative are presented in the following table.

METRIC	VALUE
Present Value of Cumulative Benefits	\$100,382,785
Present Value of Cumulative Costs	\$ 59,184,801
Present Value of Net Benefits	\$41,197,984
Benefit to Cost Ratio	1.696
Breakeven Year	FFY 2023

 TABLE 8-6: Key Cost-Benefit Analysis Metrics for 'Custom Build' Alternative

All of the above metrics have been computed using the present value of the key cost and benefit data points.

### 8.5.1 Net Benefits

Net benefits are indicative of the difference between the benefits that are expected to accrue and the costs that are expected to be incurred during the CBA time horizon.

The net benefits in present value terms for this alternative are expected to be \$41,197,984 by the end of FFY 2026.

### 8.5.2 Benefit to Cost Ratio

The benefit to cost ratio indicates the profitability index of the alternative because it represents the financial return for each dollar invested.

A cost-benefit ratio of 1.696 for this alternative indicates that a 70% return can be expected during the CBA time horizon, on the investment made in this effort. In other words, for every dollar invested there is a return of \$1.70.

### 8.5.3 Breakeven Point

The breakeven point indicates the point in time during the CBA time horizon when the cumulative investment in the project will be fully offset by the cumulative benefits that have accrued at that point in time. Since the breakeven point is computed based on actual dollars expected to be spent, present value figures have not been used for this metric.

The Custom Build alternative breaks even in FFY 2023.



The following charts present a graphical view of the *Cost-Benefit Analysis* valuation for the *Custom Build* alternative.









FIGURE 8-2: COST-BENEFIT ANALYSIS CHART FOR 'CUSTOM BUILD' USING TO-BE-INCURRED VALUES



# 9 ADAPT NJKIDS

The Adapt NJKiDS Option for a future CSE replacement system refers to adapting the New Jersey Child Support System (NJKiDS) as the 'base' system to be modified to meet all of the functional and technical requirements articulated in the *Requirements* document. While this approach will not necessarily leverage pre-built software components from elsewhere, it may draw upon the conceptual designs and industry best practices adopted by other contemporary CSE systems and similar systems.

# 9.1 KEY ASPECT S OF THE ADAPT NJKIDS ALTERNATIVES

The *Feasibility & Alternatives Analysis* report describes this alternative in great detail and also presents an assessment of the functional and technical fit of this alternative, the effort estimates and anticipated timelines to complete development and implementation of all facets of the solution, development and implementation costs, and risks associated with this effort.

ASPECT	VALUE				
Functional Gaps	17%				
TECHNICAL GAPS	9.5%				
BUSINESS GAPS	None (will be fully met)				
Size	4.654,057 SLOC (Standard Lines of Code)				
	5.35,122 UFP (Unadjusted Function Points)				
	6.45,307 FP (Adjusted Function Points)				
DEVELOPMENT & IMPLEMENTATION EFFORT	2,503 person months*				
DEVELOPMENT & IMPLEMENTATION TIMEFRAME	41 months*				
DEVELOPMENT & IMPLEMENTATION COSTS	\$46,790,310*				
KEY ASSUMPTION FOR COMPUTING COST	Team Composition				
	(90% vendor staff; 10% State staff				
	Blended Labor Rate				
	\$116.90/hours; \$18,698 per month				
	Labor Rate Components				
	Vendor: \$125/hour; State staff: 44/hour				
Applicable benefits	All				
Risk Factor	High to Extreme				
TABLE 9-1: KEY ASPECTS OF THE 'ADAPT NJKIDS' ALTERNATIVE					

Presented in table98-1 below are the key aspects of this detailed assessment that are relevant to this *Cost-Benefit Analysis*.

\*Using the weighted average of optimistic, most likely & pessimistic COCOMO-II estimates

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# 9.2 Assumptions

The following are some of the key assumptions on which the *Cost-Benefit Analysis* for this alternative is based:

As mentioned in section 4.4, it is assumed that by August 2016, OCSS will have obtained all necessary funding approvals; issued RFP's for DDI and IV&V services; and selected the vendors.

Consequently, it is assumed that:

- 1. The actual *Development and Implementation* project for the Adapt NJKiDS will commence in August 2016.
- 2. Any costs associated with *Development and Implementation* of the *Adapt NJKiDS* will be incurred only from the last two months of FFY 2016 onwards through the duration of this effort.
- 3. No benefits will accrue until completion of the actual *Development and Implementation* project.
- 4. All of the quantitative benefits identified in section 5 will be realized once the *Adapt NJKiDS* solution is operational. However, only 50% of the benefit value will be realized during the first year of operations and 75% of the benefit value will be realized in the second year. The full extent of the benefit value will be realized during each succeeding year thereafter.
- 5. The hardware and software costs for the *Custom Build* solution are based on the costs incurred for the DHS IES System.
- 6. Growth factors have not been applied to FFY 2016 through 2019 as the contract awarded to the successful bidder is expected to be controlled by a firm fixed price contract throughout this period.


# 9.3 COSTS ASSOCIATED WITH THIS ALTERNATIVE

The total cost of the alternative of implementing *Adapt NJKiDS* solution is the sum of the present values of the projected costs to be incurred with this alternative during each year of the CBA time horizon.

Some of the projected costs are expected to recur periodically, while others are not. This analysis separates costs into Recurring Costs and Non-recurring Costs. The following two sub-sections present total cost projections under each of these two cost categories. The third sub-section computes the present value of the sum of the recurring and non-recurring costs.

# 9.3.1 Non-Recurring Costs

Non-recurring costs include all one-time costs associated with this alternative. The costs include:

a. Staff Augmentation

In the event that OCSS is unable to provide sufficient staff for the project. The staff augmentation cost category has been added. The cost in this cost category is the difference in the hourly cost for contractor staff (\$90.00 per hour) versus state staff (\$44.00 per hour) times the number of staff being augmented times the number of work hours in a year (1620). This cost is expected to be incurred during FFY 2016 thru FFY 2020. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$298,080.

### b. Hardware Purchase

This is the cost of procuring the hardware components necessary to implement and support the *Adapt NJKiDS* solution.

This cost is expected to be incurred during FFY 2017 and FFY 2019. In FFY 2017, 25% of the cost is applied to set up the development and test environments. The remainder of the cost is allocated in FFY 2019. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$399,712.

# c. Software Purchase

\_This is the cost of procuring the software components necessary to implement and support the *Adapt NJKiDS* solution.

This cost is also expected to be incurred during FFY 2017 and FFY 2019. In FFY 2017, 25% of the cost is applied to set up the development and test environments. The remainder of the cost is allocated in FFY 2019. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$953,219.



### d. <u>Application Development and Implementation</u>

This is the total cost of services associated with development and implementation of the *Adapt NJKiDS* solution.

This cost is expected to be incurred during FFY 2016 to FFY 2020. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$38,590,310.

This cost is based on the Cost Estimation carried out using the COCOMO II software. Please refer to section 7.7.2.2 of the *Feasibility & Alternatives Analysis* report for more details about these estimates.

### e. Conversion

This is the total cost of services associated with converting and migrating the CSE data in InRHODES into the database associated with the *Adapt NJKiDS* solution.

This cost is expected to be incurred during FFY 2017 to FFY 2019. One-third of the cost is allocated to each FFY. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$8,200,000.

This cost is based on the Cost Estimation carried out using the COCOMO II software. Please refer to sections 7.7.2.2 of the *Feasibility & Alternatives Analysis* report for more details on these estimates.

### f. <u>Rollout</u>

This is the total cost of implementing the *Adapt NJKiDS* solution.

This cost is expected to be incurred during FFY 2020. The cost computations in the accompanying Cost Analysis Spreadsheet are based on baseline year cost of \$1,206,320. Since this cost is not part of the COCOMO estimates – it has based on expert judgment rollout costs.

g. <u>PM/QA/IV&V services</u>

This is the total cost of services associated with external Project Management, Quality Assurance, and Independent Verification & Validation to ensure that a quality product is being delivered based on agreed-upon timelines and other expectations.

This cost is also expected to be incurred during years FFY 2016 to FFY 2020. This cost is included in the COCCOMO estimate.

h. <u>Training</u>

This is the total cost of services associated with developing training materials and training staff in the *Adapt NJKiDS* solution.



This cost is expected to be incurred during FFY 2020. The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$257,600. This cost is not included in the COCCOMO estimates.

### i. <u>IES Vendor</u>

This cost is the cost for the existing IES vendor to provide: (1) knowledge transfer of the base IES system and the technology components, and lend technical support when necessary, (2) be a resource to the CSE vendor to answer questions and assist with troubling shooting, (3) supporting integration testing, and (4) any other supporting activities.

The cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year cost of \$15,120,000.

This cost is also expected to be incurred during FFY 2016 to FFY 2020.

Table 9-2 summarizes the total projected non-recurring costs that are expected to be incurred for the *Adapt NJKiDS* alternative over the entire 12-year CBA time horizon.

	COST CATEGORY	AMOUNT	INCURRED DURING
a.	Staff Augmentation	\$1,018,440	FFY 2016-2020
b.	Hardware Purchase	\$ 399,712	FFY 2017 & 2019
C.	Software Purchase	\$953,219	FFY 2017 & 2019
d.	Application development & implementation	\$38,590,310	FFY 2016-2020
e.	Conversion	\$8,200,000	FFY 2017-2019
f.	Rollout	\$1,206,320	FFY 2020
g.	PM/QA/IV&V services	Included in	
		Application	
		Development	FFY 2016-2020
h.	Training	\$257,600	FFY 2020
i.	IES Vendor	\$15,120,000	FFY 2016-2020
	TOTAL NON-RECURRING COSTS	\$65,745,601	

 TABLE 9-2: TOTAL NON-RECURRING COSTS

As can be seen from the table 9-2 above, *Application development & implementation* costs are the largest cost component of the non-recurring costs. At \$38.6 million of the \$65.7 million total, this cost component accounts for 58.7% of the total non-recurring cost. IES Vendor costs are the second largest component of the non-recurring costs, accounting for \$15.1 million of the 65.7 million total.



Please refer to the section 7.7.2.2 of the *Feasibility & Alternatives Analysis* Report for details on the data, methods, and tools used to estimate these two cost components.

### 9.3.2 Recurring Costs

Recurring costs include all the costs associated with this alternative that are expected to be regularly incurred on a periodic basis. The component costs included in the recurring cost of the *Adapt NJKiDS* alternative are:

### a. <u>Direct Personnel – DOIT:</u>

This is the cost for direct support of OCSS functions by DOIT. This cost includes the following components: Salary, retirement, FICA, Medical insurance, dental insurance, and vision insurance, a fringe benefit assessment, and retiree health insurance.

For FFY 2020 to FFY 2026 the full value of this cost, if incurred, is expected to be the same as that projected for the Status Quo during that year - i.e., the cost computations in the accompanying Cost Analysis spreadsheet are based on baseline year (FFY 2014) annual cost of \$292,605 and an annual growth factor of 2%. In FFY 2020, 75% of the costs are applied to reflect the implementation of the Adapt NJKiDS solution during that year.

### b. Contractor Services

The InRHODES Application is supported by a contractor - Northrop Grumman. It is assumed that the future CSE replacement system will also be supported by a contractor.

The cost computations in the accompanying Cost Analysis Spreadsheet are based on the cost allocation that will be applied with the implementation of the IES system. The cost is calculated as 5% of the total development cost. In FFY 2020 this cost will be 42.0% of the cost and 100% thereafter.

### c. <u>Hardware/Software - Local</u>

This is the total cost of hardware and software equipment that OCSS presently has at the main office. This cost includes imaging software, imaging hardware and other PC equipment and related costs.

This cost will continue with the future CSE replacement system. The costs for this category will be the Status Quo Costs for the FFY reduced for the future CSE replacement system having centralized imaging equipment.

# d. Server Costs - Central



The future CSE replacement system will be server based. The recurring server costs are calculated as the annual server maintenance cost of \$102,202 times the percent allocated to OCSS times the annual growth factor of 3%. The FFY 2020 cost will be 75% of the cost and 100% thereafter.

#### e. Software Costs - Central

This is the total cost for support of the server related software costs for the future CSE replacement system. The software costs are calculated as the annual software maintenance costs of \$1,150,173 times the percent allocates to OCSS times the annual growth factor of 3%. The FFY 2020 cost will be 75% of the cost and 100% thereafter.



Table 9-3 below summarizes the total projected recurring costs (in thousands) that are expected to be incurred for the Adapt NJKiDS alternative over the entire 12-year CBA time horizon. (Some figures may not add due to rounding).

YEAR (20)	DIRECT PERSONNEL – DOIT	<b>CONTRACTOR</b> <b>SERVICES</b>	HARDWARE/SOF TWARE - LOCAL	MAINFRAME Costs - Central	SOFTWARE COSTS - CENTRAL	TOTAL Projected Recurring Costs
15	\$0	\$0	\$0	\$0	\$0	\$0
16	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$0	\$0	\$0	\$0	\$0
18	\$0	\$0	\$0	\$0	\$0	\$0
19	\$0	\$0	\$0	\$0	\$0	\$0
20	\$232,886	\$1,163,960	\$66,410	\$66,410 \$12,078 \$130,723		\$1,606,057
21	\$316,725	\$2,877,309	\$91,203	\$16,587	\$177,784	\$3,479,607
22	\$323,059	\$2,963,628	\$93,939	\$17,085	\$181,339	\$3,579,050
23	\$329,520	\$3,052,537	\$96,757	\$17,597	\$184,966	\$3,681,378
24	\$336,111	\$3,144,113	\$99,659	\$505,372	\$1,350,635	\$5,435,890
25	\$342,833	\$3,238,437	\$102,649	102,649 \$18,669 \$192,439 \$3,8		\$3,895,027
26	\$356,546	\$3,335,590	\$105,729	\$19,229	\$196,288	\$4,013,382
	\$2,237,681	\$19,775,574	\$656,345	\$606,617	\$2,414,174	\$25,690,391

TABLE 9-3: SUMMARY OF RECURRING (	COSTS OVER THE	COST-BENEFIT	HORIZON FOR	'ADAPT NJKIDS'
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### 9.3.3 Present Value of Costs

All of the costs present above are based on the current dollar value of each cost component. To reflect the time value of money, these costs are then discounted to their present value using a 7% value factor.

The table below shows the non-recurring, recurring, and total cost data adjusted with the 7% value factor.

YEAR (20)	NON-RECURRING COSTS	RECURING COSTS	TOTAL PROJECTED COSTS FOR 'ADAPT NJKIDS	PRESENT VALUE FACTOR	TOTAL PRESENT VALUE COSTS FOR 'ADAPT NJKIDS'	CUMULATIVE TOTAL PROJECTED COSTS FOR 'ADAPT NJKIDS'
15	\$0	\$0	\$0	0.9667	\$0	\$0
16	\$2,184,134	\$0	\$2,184,134	0.9035	\$1,973,365	\$1,973,365
17	\$16,862,854	\$0	\$16,862,854	0.8444	\$14,238,994	\$16,212,359
18	\$19,957,035	\$0	\$19,957,035	0.7892	\$15,750,092	\$31,962,451
19	\$20,971,733	\$0	\$20,971,733	0.7376	\$15,468,750	\$47,431,201
20	\$5,769,845	\$1,606,057	\$7,375,902	0.6893	\$5,084,209	\$52,515,410
21	\$0	\$3,479,607	\$3,479,607	0.6442	\$2,241,563	\$54,756,973
22	\$0	\$3,579,050	\$3,579,050	0.6021	\$2,154,946	\$56,911,920
23	\$0	\$3,681,378	\$3,681,378	0.5626	\$2,071,143	\$58,983,063
24	\$0	\$5,435,890	\$5,435,890	0.5258	\$2,858,191	\$61,841,254
25	\$0	\$3,895,027	\$3,895,027	0.4914	\$1,914,016	\$63,755,270
26	\$0	\$4,013,382	\$4,013,382	0.4593	\$1,843,346	\$65,598,616
TOTAL	\$65,745,601	\$25,690,391	\$91,435,992		\$65,598,616	\$65,598,616

TABLE 9-4: PRESENT VALUE OF THE COSTS FOR 'ADAPT NJKIDS'



# 9.4 **BENEFITS OF IMPLEMENTING THIS ALTERNATIVE**

As presented in section 9.1, the estimated elapsed time (schedule) for completion of development and implementation of the *Adapt NJKiDS* solution is 41 months. Based on this schedule and the quantitative and qualitative benefits identified in sections 5.3 and 6, this section assesses the expected value of the quantitative benefits and the potential impact of the qualitative benefits from the *Adapt NJKiDS* alternative during the CBA time horizon.

# 9.4.1 Quantitative Benefits

The total value of the quantitative benefits to be derived from the *Adapt NJKiDS* alternative is the present value of the sum of the projected benefits to be accrued with this alternative during each year of the CBA time horizon.

The specific calculations for the benefits that could be realized during each year of the CBA time horizon were developed in Section 5 - Quantitative Benefits. Based on the estimated implementation schedule for this alternative, the following are some of the highlights of the quantitative benefits associated with the *Adapt NJKiDS* alternative.

1. No benefits will be derived from this alternative until after the second quarter of FFY 2020 when the *Adapt NJKiDS* alternative is fully implemented.

The only exception to this is that the cost savings resulting from reducing InRHODES Application Maintenance Contractor costs to a minimum level will be realized during the application development and implementation period (FFY 2016 to 2020).

- 2. Benefits derived during FFY 2020, the first year of production, are expected to be 50% of the projected full benefits for that year.
- 3. Benefits derived during FFY 2021, the second year of production, are expected to be 75% of the projected full benefits for that year.
- 4. After FFY 2022, the full extent of the benefits will be realized for each year thereafter.
- 5. The current value of the total potential benefits accruing from the *Adapt NJKiDS* alternative is \$182,303,956.
- 6. The present value of the total benefits (benefits adjusted for the 7% value factor) associated with this alternative is *\$100,382,785*.



Table 9-5 below presents a summary of the quantitative benefits associated with the *Adapt NJKiDS* alternative.

YEAR	Annual ]	BENEFITS	CUMULATIV	'E BENEFITS
	PROJECTED BENEFITS	PRESENT VALUE OF BENEFITS	PROJECTED BENEFITS	PRESENT VALUE OF BENEFITS
1 – FFY 2015	\$0.00	\$0.00	\$0.00	\$0.00
2 – FFY 2016	\$0.00	\$0.00	\$0.00	\$0.00
3 – FFY 2017	\$0.00	\$0.00	\$0.00	\$0.00
4 – FFY 2018	\$0.00	\$0.00	\$0.00	\$0.00
5 – FFY 2019	\$0.00	\$0.00	\$0.00	\$0.00
6 – FFY 2020	\$13,020,679	\$8,975,154	\$13,020,679	\$8,975,154
7 – FFY 2021	\$20,197,683	\$13,011,347	\$33,218,362	\$21,986,502
8 – FFY 2022	\$27,849,525	\$16,768,199	\$61,067,887	\$38,754,700
9 – FFY 2023	\$28,800,244	\$16,203,017	\$89,868,131	\$54,957,718
10 – FFY 2024	\$29,783,480	\$15,660,154	\$119,651,611	\$70,617,872
11 – FFY 2025	\$30,800,347	\$15,135,290	\$150,451,958	\$85,753,162
12 – FFY 2026	\$31,851,999	\$14,629,623	\$182,303,956	\$100,382,785
Total	\$182,303,956	\$100,382,785	\$182,303,956	\$100,382,785

TABLE 9-5: SUMMARY OF BENEFITS FOR THE 'ADAPT NJKIDS' ALTERNATIVE



### 9.4.2 Qualitative Benefits

The *Adapt NJKiDS* solution will yield each of the qualitative benefits identified in section 6. The extent of impact that the *Adapt NJKiDS* solution will have with respect to each of these qualitative benefits have been presented in the following table.

QUALITATIVE BENEFIT	AREA OF IMPACT	EXTENT OF IMPACT
Socio Economic Impact	- Program Accountability	Medium
Improved quality of service	- Delivery of Services	High
Effective delivery of services	- Program Effectiveness	Very High
	- Delivery of Services	
Improved user experience	- Program Effectiveness	Very High
	- Performance Measures	
	- Efficiency gains	
	- Delivery of Services	
Better access to management	- Program Performance	Very High
and operational information	- Program Effectiveness	
	- Efficiency gains	
Improved interfacing & data	- Program Effectiveness	High
exchange capability	- Efficiency gains	
	- Delivery of Services	
More Comprehensive &	- Program Effectiveness	High
Flexible Technology Solution	- Efficiency gains	
	- Delivery of Services	
	- System Maintainability	
Better equipped to respond to	- Program Accountability	Very High
stakeholder needs	- Program Performance	
Improved quality of system	- System Maintainability	Very High



QUALITATIVE BENEFIT	AREA OF IMPACT	EXTENT OF IMPACT
support		
Lower Maintenance Costs &     Ricks	- Program Accountability	Very High
UISK2	- System Maintainability	
Disaster Recovery	- Program Accountability	Very High
Accountability	- Program Accountability	Very High

TABLE 9-6: ASSESSMENT OF QUALITATIVE BENEFITS FOR THE 'ADAPT NJKIDS' ALTERNATIVE



# 9.5 COST-BENEFIT ANALYSIS VALUATION FOR THIS ALTERNATIVE

METRIC	VALUE
Present Value of Cumulative Benefits	\$100,382,785
Present Value of Cumulative Costs	\$ 65,598,616
Present Value of Net Benefits	\$34,784,169
Benefit to Cost Ratio	1.530
Breakeven Year	FFY 2023

The key metrics for the *Adapt NJKiDS* alternative are presented in the following table.

TABLE 9-7: KEY COST-BENEFIT ANALYSIS METRICS FOR 'ADAPT NJKIDS' ALTERNATIVE

All of the above metrics have been computed using the present value of the key cost and benefit data points.

### 9.5.1 Net Benefits

Net benefits are indicative of the difference between the benefits that are expected to accrue and the costs that are expected to be incurred during the CBA time horizon.

The net benefits in present value terms for this alternative are expected to be \$34,784,169 by the end of FFY 2023.

#### 9.5.2 Benefit to Cost Ratio

The benefit-cost ratio indicates the profitability index of the alternative because it represents the financial return for each dollar invested.

A cost-benefit ratio of **1.530** for this alternative indicates that a 53% return can be expected during the CBA time horizon, on the investment made in this effort. In other words, for every dollar invested there is a return of \$1.53.

### 9.5.3 Breakeven Point

The breakeven point indicates the point in time during the CBA time horizon when the cumulative investment in the project will be fully offset by the cumulative benefits that have accrued at that point in time. Since the breakeven point is computed based on actual dollars expected to be spent, present value figures have not been used for this metric.

The Adapt NJKiDS alternative breaks even in FFY 2023.



The following charts present a graphical view of the *Cost-Benefit Analysis* valuation for the *Adapt NJKiDS* alternative.



FIGURE 9-1: COST-BENEFIT ANALYSIS CHART FOR 'ADAPT NJKIDS' USING PRESENT VALUES



FIGURE 9-2: COST-BENEFIT ANALYSIS CHART FOR 'ADAPT NJKIDS' USING PTO-BE-INCURRED VALUES

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# **10 COMPARISON OF ALTERNATIVES & CONCLUSION**

The objective of the Cost Benefit-based comparisons presented below is to identify the *future InRHODES CSE alternative* that would provide the best value to the State of Rhode Island in financial terms.

To recap, this Cost-Benefit Analysis report has examined the following two viable alternatives for the *future InRHODES CSE solution* and the Status Quo (which is not a viable alternative):

- a. *Status Quo*: the option of not replacing InRHODES; but continuing to extend and use the current InRHODES to support the State of Rhode Island's Child Support program.
- b. *Custom Build*, the option of replacing InRHODES CSE with a new system built ground up to the exact specifications of the State and fully leveraging the reusable assets of the State's new IES system (RI Bridges)
- c. *Adapt NJKiDS*, the option of using the existing New Jersey Child Support System (NJKiDS) as a 'base' system and modifying it to meet the functional and technical requirements articulated in the *Requirements Document*.

# **10.1 COMPARISON OF QUANTITATIVE METRICS**

Table 10-1 below summarizes the key quantitative metrics for the cost-benefit valuation of each of the above alternatives.

METRIC	STATUS QUO		ADAPT NJKIDS
Present Value of Cumulative Benefits	NA	\$100,382,785	\$100,382,785
Present Value of Cumulative Costs	\$16,904,432	\$59,184,801	\$65,598,616
Present Value of Net Benefits	NA	\$41,197,984	\$34,784,169
Benefit to Cost Ratio		1.696	1.530
Breakeven Year	NA	FFY 2023	FFY 2023

TABLE 10-1 COST-BENEFIT ANALYSIS VALUATION SUMMARY

Please note that:

- a. The CBA time horizon covers a 12-year period beginning with the *Feasibility Study*.
- Benefits associated with each of the alternatives are the benefits to be accrued <u>over and above</u> the current benefits resulting from the *Status Quo*. Therefore, the benefits resulting from the *Status Quo* have not been calculated.



As is apparent from Table 10-1 above, the cost of operating the *Status Quo* during the CBA time horizon is over \$16.9 million in present value terms. Given that (a) InRHODES CSE cost of ownership is high; (b) is difficult to maintain; (c) resources to maintain the legacy applications will become more difficult to find; and (d) has been in operations for over 25 years, any portion of this \$16.9 million that can be channeled into a replacement effort will yield greater returns for OCSS.

As can be seen from Table 10-1 above, each dollar invested in any of the *InRHODES CSE replacement alternatives* is expected to produce a return of at least \$1.70 during the 12-year CBA time horizon. Since all both alternatives have positive benefits, the remainder of this section examines and compares the two *InRHODES CSE replacement alternatives* - i.e., *Custom Build and Adapt NJKiDS*.

The line graphs in Figure 10-1 below display the present values of the cumulative costs and benefits for the *Custom Build and Adapt NJKiDS* alternatives.



FIGURE 10-1: COST-BENEFIT COMPARISON - INRHODES CSE REPLACEMENT ALTERNATIVES



Some noteworthy points about the CBA comparison are:

### 10.1.1 Benefits

The present value benefits resulting from Custom *Build* and *Adapt NJKiDS* have the same dollar value of about \$100,382,785 million. This benefit amount is the cumulative benefits for FFY 2020 through FFY 2026. These benefits are equal because: (a) the analysis assumes that all alternatives would meet 100% of functional requirements articulated in the *Requirements Document*; and (b) both alternatives have identical implementation schedules, and therefore start realizing benefits at the same time.

### 10.1.2 Costs

• *Adapt NJKiDS* has the highest present value costs of the two alternatives. The cumulative present value cost for this alternative is \$65,598,616 as compared to \$59,184,101 for *Custom Build*.

### 10.1.3 Net Benefits

- Both alternatives have positive present value net benefits over the CBA time horizon.
- The net benefits derived from Adapt NJKiDS are \$34,784,169, and Custom Build is \$41,197,984.

### 10.1.4 Benefits to Cost Ratio

• *Custom Build* results in the highest *Benefit to Cost* ratio of 1.696 versus 1.530 for *Adapt NJKiDS*. The *Benefit to Cost* ratio represents the dollar value of the return that can be expected on each dollar that is invested in respective alternative.

#### 10.1.5 Breakeven Year

- Both the Custom Build and Adapt NJKiDS alternatives break even in FFY 2023. The net benefits for *Custom Build are larger In FFY 2023 (\$20,272,251 vs. \$11,776,438)* than Adapt NJKiDS. The breakeven point occurs when, during the CBA time horizon, the cumulative investment in the project will be fully offset by the cumulative benefits that have been accrued.
- The breakeven point is determined using **actual or current** value benefits instead of the present value of benefits.

### **10.1.6** Qualitative benefits

• Although both *InRHODES CSE replacement alternatives* will provide a number of qualitative benefits, the measure of effectiveness of these qualitative benefits is the highest with the Custom *Build* alternative.

The above findings suggest that:

a) Given the age, approaching technology-obsolescence of InRHODES, and the planned full implementation of IES for DHS, any portion of the \$16,904,432 *Status Quo* cost (over the CBA time horizon) that can be avoided, and channeled into one of the *InRHODES CSE replacement alternatives*, will yield greater returns for OCSS.



b) *Custom Build will* provide a higher Return on Investment, while both *Adapt NJKiDS* and *Custom Build* have the same break-even point.

\*Based on the results of the Cost-Benefit Analysis the *Custom Build alternative is the better option for DHS- OCSS.* 



# **10.2 COMPARISON OF QUALITATIVE METRICS**

In addition to the quantitative metrics discussed above, qualitative benefits analysis was also performed for each alternative. The purpose of the qualitative benefits analysis is to determine the measure of (qualitative) effectiveness of each of the *InRHODES CSE replacement alternatives*. The following table presents a summary of the qualitative benefit analysis.

QUALITATIVE BENEFIT	MEASURES OF E	FFECTIVENESS
	CUSTOM BUILD	ADAPT NJKIDS
- Socio Economic Impact	Medium	Medium
- Improved quality of service	High	High
- Effective delivery of services	Very High	Very High
- Improved user experience	Very High	Very High
<ul> <li>Better access to management and operational information</li> </ul>	Very High	Very High
<ul> <li>Improved interfacing &amp; data exchange capability</li> </ul>	Very High	High
- More Comprehensive & Flexible Technology Solution	Very High	High
- Better equipped to respond to stakeholder needs	Very High	Very High
<ul> <li>Improved quality of system support</li> </ul>	Very High	Very High
- Lower Maintenance Costs & Risks	Very High	Very High
- Disaster Recovery	Very High	Very High
- Accountability	Very High	Very High

 TABLE 10-2: QUALITATIVE ANALYSIS COMPARISONS

As can be seen from table 10-2 above, both alternatives demonstrate generally high scores for most of the qualitative benefits. This would be expected because this analysis assumes that all three alternatives will be able to meet all the functional requirements identified in the *Requirements Document*.

ALTERNATIVE	# OF BENEFITS BY EXTENT OF IMPACT			Assigning the values:		The resultant Scor	e is:
	MEDIUM	Нідн	VERY HIGH	1: to <i>Medium</i> rating		Custom Build:	32
Custom Build	1	1	10	2: to <i>High</i> rating	Π	Adapt NJKiDS:	24
Adapt NJKiDS	1	3	8	3: to Very High rating	I.		



# **10.3 CONCLUSION**

This *Cost-Benefit Analysis* has attempted to answer the following question for the State of Rhode Island OCSS.

*Of the two most beneficial and viable alternatives selected by the Feasibility & Alternatives Analysis, is it more cost-effective to:* 

1. Custom-build a replacement for the future CSE replacement system to meet the Rhode Island Requirements?

#### OR

2. Modify the existing New Jersey Child Support Enforcement System (Adapt NJKiDS) to meet the Rhode Island Requirements?

The first conclusion of this report is that, given the age and approaching technology-obsolescence of InRHODES, any portion of the \$16.9 million *Status Quo* cost that can be avoided and channeled into one of the *InRHODES CSE replacement alternatives* will yield greater returns to OCSS.

In terms of the 2 *InRHODES CSE replacement alternatives,* the results of this Cost-Benefit Analysis indicate that the financial indicators show the *Custom Build alternative is the best alternative for DHS-OCSS.* 

Although all three *InRHODES CSE replacement alternatives* will provide a number of qualitative benefits, the measure of effectiveness of these qualitative will be the highest with the *Custom Build* alternative.

The ensuing *Recommendations Report* will take into consideration, the conclusion of this report in conjunction with the findings of the *Feasibility & Alternatives Analysis Report* to recommend the alternative to be pursued by the *future InRHODES CSE initiative*.



# **11 APPENDICES**

- Appendix I <u>Cost-Benefit Analysis spreadsheet</u>
- Appendix II Cost Analysis spreadsheet
- Appendix III Benefit Analysis spreadsheet

Please refer to the Supporting Documents folder that is under the Cost Benefit Analysis folder in the accompanying CD for the above appendices