



State of Washington  
Joint Legislative Audit and Review  
Committee

---

Juvenile Rehabilitation  
Capacity Planning

Report 97-3

---

January 10, 1997

*Upon request, this document is available in alternative formats  
for persons with disabilities.*

---

---

# TABLE OF CONTENTS

---

<b>Chapter</b>		<b>Page</b>
	<b>Summary</b>	<b>i</b>
	<b>Summary of Recommendations</b>	<b>xi</b>
<b>1</b>	<b>Background</b>	<b>1</b>
	JRA Facility Overview	2
	The 1995 Facility Master Plan	4
	The Rebuilding of Green Hill School and the Development of the Housing Unit Prototype	5
<b>2</b>	<b>System Needs: JRA Population Forecast Versus Current and Planned Capacity</b>	<b>7</b>
	JRA Population Forecast	7
	Current and Planned System Capacity	8
<b>3</b>	<b>JRA Facility Costs</b>	<b>13</b>
	Total Costs	13
	Operating Costs	14
	Capital Costs	18
	Recommendation	20
<b>4</b>	<b>Opportunities for Cost Savings</b>	<b>21</b>
	Introduction	21
	The JLARC Capital Cost Model	22
	Cost Reducing Strategies	24
	Concluding Discussion	29
	Recommendations	30

<b>Chapter</b>		<b>Page</b>
<b>5</b>	<b>Further Efficiencies</b>	<b>33</b>
	Analysis of Non-Traditional Construction	33
	Staffing Efficiencies	35
	Conclusion	37
	Recommendations	38
<b>Appendices</b>		
<b>1</b>	<b>Scope and Objectives</b>	<b>39</b>
<b>2</b>	<b>Agency Response</b>	<b>41</b>
<b>3</b>	<b>Sensitivity of Discount Rates</b>	<b>57</b>
<b>4</b>	<b>Cash Flow Analysis</b>	<b>59</b>

---

---

# JUVENILE REHABILITATION CAPACITY PLANNING

## Summary

---

**T**he Juvenile Rehabilitation Administration (JRA) within the Department of Social and Health Services currently operates six secure facilities for the custody and treatment of juvenile offenders: three institutions—Green Hill, Maple Lane, and Echo Glen; and three Youth Camps—Naselle, Mission Creek, and Indian Ridge.<sup>1</sup> Combined annual operating costs for these facilities are approximately \$47 million, or \$52,800 per bed.

The Joint Legislative Audit and Review Committee (JLARC) had already planned to study the impact of housing unit design on JRA operating costs, when it was mandated in the 1996 Supplemental Budget to conduct a similar study on “staffing models and staff deployment” at the institutions. Responding to the committee’s initial interests as well as the mandated issues, this study reviews the capital and operating costs of JRA’s major facilities.

The report estimates that an annualized savings of up to \$3.5 million could be achieved by replacing smaller sized housing units with larger units, and by consolidating smaller facilities into larger institutions. A total of seven recommendations are included.

## THE 1995 FACILITY MASTER PLAN . . . AND THE CURRENT GREEN HILL PROJECT

JRA does not have an ongoing master planning process. However, in 1994, in response to rapidly increasing institutional populations,

---

<sup>1</sup> Two additional facilities, a 48-bed Basic Training Camp and an 80-bed unit at Eastern State Hospital, are also expected to open in early 1997.

---

## Background

---

**Potential  
savings of  
\$3.5 million**

the legislature appropriated \$300,000 to JRA to develop a comprehensive master plan for its facilities. The plan, which was prepared by the firm of NBBJ, provided a comprehensive overview of JRA facilities and identified physical options for system expansion. A major shortcoming, however, was that it contained only minimal economic analyses of the major capital alternatives.

Nevertheless, this plan did serve as the basis for JRA’s 1995-97 capital plan and budget request, which was largely funded by the legislature. The major project was to rebuild Green Hill School, and expand its capacity from 144 to 254 beds. In the fall of 1995, however, a new juvenile institution population forecast was released that was significantly higher than the one on which the master plan had been based. This led to expanding the original Green Hill plan even further, from 254 beds to 416 beds.

---

New housing  
prototype  
offers  
efficiencies

A key feature of the Green Hill project has been the development of a 64-bed housing unit prototype. Because of its size, it offers substantial staffing efficiencies when compared to many older and smaller housing units. The current plan for Green Hill calls for building six of these units. At present, JRA has only secured funding to construct three of the units. It has, however, received funding to build out the facility’s infrastructure to the level necessary to accommodate the full 416 residents. JRA will be seeking funding from the 1997 Legislature to build the additional three prototype units.

## JRA POPULATION FORECAST VERSUS CURRENT AND PLANNED CAPACITY

---

Newest  
forecast is  
lower

Each fall the Office of Financial Management (OFM) prepares a ten-year JRA Institutional Population Forecast. The newest 1997 forecast is substantially lower than the 1996 forecast—the one on which the decision to expand the Green Hill project was based.

As a result of the newest population forecast, current and *already-funded* new capacity is now expected to exceed the forecasted population for the next several years, barring any major changes to current sentencing practices. The extent to which capacity exceeds forecasted demand depends on which capacity level is being considered. At *rated* capacity, the excess will range from 2 to 72 beds between FY 1998 and 2002. At the higher *maximum operating capacity* level, the excess will range from 130 to 206 beds.

We did not attempt to assess which of the two capacity levels is the most appropriate to use for capital planning purposes. Because the budget implications are significant, however, it is an issue which should be considered by the legislature.

Even at the lower rated capacity levels, the numbers cast doubt on the need to proceed with any additional capacity building projects at this time. Such projects include a new 300-bed facility in Eastern Washington that had been called for in the 1995 master plan, as well as two additional new capacity building projects included in JRA's recently released 10-Year Capital Plan. The numbers also cast doubt on the need to proceed with building the additional three prototype units at Green Hill for *capacity building* purposes.

## FACILITY COSTS

Annual operating costs for JRA facilities averaged \$52,800 per bed in FY 1996. Due to current capital projects, this average will be reduced to \$50,500 by FY 1998. Of this latter amount, approximately 50 percent of the total cost is attributable to housing unit staff, 35 percent to other facility staff, and the remaining 15 percent is attributable to non-labor costs.

Housing unit size is a major driver of a facility's total operating costs. Staffing costs for JRA's 64-bed prototype unit are projected to be \$20,200 per bed, compared to \$27,500 in JRA's standard 16-bed cottages. Because of similar economies of scale, overall facility size is also a major cost driver. We found, for example, that per bed costs for administrative services were \$4,100 at Maple Lane (260 beds), whereas they were \$6,200 at Indian Ridge (76 beds).

Proportionately, capital costs are much less than operating costs. We estimate the current annual equivalent capital cost for all JRA facilities, calculated over a 50-year period, to be approximately \$8,900 per bed.

One capital cost that stands out relates to staff housing at Naselle Youth Camp, the only facility to provide housing for some of its employees. Rent is charged for the 27 units, but the amounts are nominal (from \$92 to \$160 per month) and do not come close to covering anticipated future repair costs. JRA officials indicate there is no programmatic need for these units.

---

**Additional capacity may not be needed**

---

**Major cost driver: size**

*The report recommends that the legislature consider either eliminating all future funding for these units or requiring that rents be set high enough to cover all associated costs.*

## Savings possible by replacing housing units

### OPPORTUNITIES FOR COST SAVINGS

Using the 64-bed housing prototype unit as a benchmark of efficiency, we reviewed JRA facilities to determine whether cost savings could be achieved by replacing their existing housing units with one or more prototype units. We also looked at various “cross-facility” strategies to see if other efficiencies could be realized. To assist in our analysis, we developed a capital cost model that is summarized in Exhibit 9 in Chapter 4.

#### Replacing Existing Units at Their Current Locations

There were a number of instances where we found that significant cost savings could be realized by immediately replacing existing housing units with one or more prototype units. These are summarized in the following table. The cost figures shown are annual equivalent amounts, expressed in current 1996 dollars, and calculated over a 50-year period.

Scenario	Total Annual Savings	Per bed Annual Savings
<b>Maple Lane School</b>		
Replace four 15-16 bed cottages with one prototype	\$399,535	\$6,444
Replace three 24-bed cottages with one prototype	\$78,116	\$1,085
<b>Echo Glen</b>		
Replace eight 16-bed cottages with two prototypes	\$669,841	\$5,233
Replace twelve 16-bed cottages with three prototypes	\$1,005,647	\$5,238

The figures in the table are based on the unit’s rated capacity. When calculated at maximum operating capacity, the amounts are often, but not always, reduced to some extent.

#### Consolidating Facilities

We also found that significant savings could be achieved by consolidating the two smallest facilities, Indian Ridge and Mission Creek, at Green Hill. As noted previously, Green Hill is in the process of being rebuilt, including the construction of three prototype units and an infrastructure sufficient to accommodate three more

units. The newest population forecast, however, casts doubt on whether those additional units will be needed for new capacity. The table below shows the savings which could be achieved by consolidating Indian Ridge and Mission Creek separately at Green Hill, as well as the combined effect of doing both.

Scenario	Total Annual Savings	Per bed Annual Savings
Close Indian Ridge and consolidate at Green Hill by building an additional prototype unit	\$636,195	\$8,371
Close Mission Creek and consolidate at Green Hill by building an additional prototype unit	\$491,543	\$8,192
Close both facilities, and consolidate at Green Hill by building two additional prototype units	\$1,264,959	\$9,301

The cost savings here are achieved not so much because of increased housing unit efficiency, but rather because of increased economies of scale. The greatest amount of savings is achieved in the area of non-housing unit staff.

### Using Existing Facilities More Efficiently

We also identified one option that combines replacement efficiencies with other savings that come from using existing facilities more efficiently. This involves the 32-bed Intake Unit at Maple Lane. Currently it is located in one of the two wings of that facility’s new maximum security building. Programmatically, however, it does not need to be located there. By combining this unit and two other cottages into a new prototype unit, and then moving two other maximum security units into the space now occupied by the Intake unit, substantial savings could be achieved. We estimate the annual savings to be approximately \$710,000, and the per bed savings to be \$11,460.

### Conclusions and Recommendations

Our analysis shows that JRA has been on the right track in terms of its development of the housing prototype unit. The prototype offers significant cost savings in comparison to many of the existing housing unit types at JRA facilities.

The total, maximum amount of annual equivalent cost savings identified in this report is just less than \$3.5 million. The fact that

---

**Consolidating facilities could save money**

---

**Cost savings over \$3 million**

JRA should  
amend its  
capital plan  
...

... and  
develop a  
master  
planning  
process

such savings are there to be identified points to the need for JRA to develop an ongoing master planning process that incorporates the types of analytic tools that we have utilized in this study. This would enable JRA to respond to changing population forecasts in the most cost-effective manner possible.

*The report recommends that:*

- *JRA amend its capital plan to provide for the earliest possible replacement of housing units identified as being non-cost-effective, as well as the consolidation of Indian Ridge and Mission Creek at Green Hill or Maple Lane;*
- *JRA develop an ongoing master planning process that incorporates the type of analytic tools used in this study; and*
- *The legislature, when reviewing JRA capital requests for additional housing units, be provided with analysis as to whether the projects meet benchmarks of capital and operating efficiency.*

## FURTHER EFFICIENCIES

There are two additional areas where we identified opportunities for potential cost savings: alternative construction methods and staffing efficiencies.

### Alternative Construction Methods

As part of the 1995 Master Plan, the consulting firm of NBBJ reviewed an alternative to traditional construction methods to determine if it might offer a more cost-efficient approach to providing new JRA beds. The traditional method is to build structures on site, basically from scratch. The alternative method reviewed by NBBJ is called “modular construction,” and can include different materials and methods of construction, ranging from fabric structures to pre-cast concrete cells.

NBBJ’s review concluded that modular construction would be more costly over time, and as a result, this option was not explored further. We found, however, that this conclusion was based on questionable assumptions and a technically flawed analytical model. In conducting our own analysis, we compared reported costs of building

pre-cast concrete housing units to the budgeted cost for building JRA's prototype housing units, and found that the pre-cast alternative may result in savings of up to 26 percent. Since we had only limited information on the cost of pre-cast units, we cannot predict that savings of this magnitude would actually occur. Nevertheless, our analysis does suggest that alternative construction methodologies should be given serious consideration.

***The report recommends that JRA incorporate a thorough review of alternative construction methods into its capital planning processes. If they show potential for reducing costs, the bidding and pre-design processes should be structured so as to allow for competition from these methods.***

## Staffing Efficiencies

Existing staffing practices in JRA facilities are due more to history and decentralized control than to systematic planning. JRA recently developed its first formal staffing plan to estimate staffing needs for its new 64-bed prototype units. In addition, the model also identifies staffing needs for its smaller housing units. When we compared the model to *actual* staffing in these smaller units, we found that it was sometimes more costly and sometimes less costly than current practice.

Those units where current staffing is less costly than that provided for in the model can be viewed as internal benchmarks of efficiency. We estimate that if all of JRA's existing housing units were staffed at either the internal benchmark level, or the staffing model level—whichever was cheapest—it would result in savings of approximately \$284,000 per year.

In reviewing JRA's staffing model, we also found that some efficiencies could potentially be realized by adjusting the mix of *counselor* (the higher paid) and *counselor assistant* (the lower paid) positions. Finally, although the development of the staffing model is a positive step for JRA, the model is limited to housing unit staff only. We found that there are sometimes significant variations between facilities in the cost of support services. Expanding the staffing model to include support personnel could result in further reducing and controlling costs.

---

Alternative construction methods should be studied

---

Staffing efficiencies could be realized

*The report recommends that JRA further develop and apply an efficient staffing model for both housing units and support services.*

## AGENCY RESPONSE

The Department of Social and Health Services concurs with Recommendations 5 and 7, partially concurs with Recommendations 1, 2, 4, and 6, and does not concur with Recommendation 3.

The department does not concur with the recommendation that JRA should amend its capital plan to provide for the consolidation of Indian Ridge and Mission Creek Youth Camps at a larger facility. JRA's position is that the Governor's recently proposed juvenile sentencing initiatives will require operation of all current institutions for the next several years. Our response is that even if one assumes the Governor's proposals are enacted, JRA's capital plan should still provide for the closure of the smaller camps. Building new capacity should not be incompatible with consolidating existing capacity.

The department also raises concerns about losing DNR forestry work, and refers to it as an effective rehabilitation tool that cannot be replicated at a larger institution. We are unaware of any evaluation of the effectiveness of the forestry program, and according to DNR, relocating the forestry work program to a larger JRA institution is a possibility. Furthermore, JRA told us previously that it would not be particularly problematic if the forestry work program were discontinued, and that these programs could likely be replaced with other work training programs.

We estimate that maintaining these forestry jobs at the camps costs approximately \$18,000 more annually per DNR participant than if the program were moved to a major institution.

JRA's full response to this report, and the auditor's comments on the response, appears in Appendix 2. Also included in Appendix 2 are comments received from the Office of Financial Management concerning Recommendation 6.

## ACKNOWLEDGEMENTS

This study was conducted by Bob Thomas, Robert Krell, and Beth Keating of the JLARC staff. Valerie Whitener of the JLARC staff also provided assistance, as did Robert Williams of Robert M. Williams and Associates.

We appreciate the considerable assistance provided by JRA staff. We also wish to thank Bill Phillips of the Department of Corrections and Craig Donald of the Department of General Administration for their technical review of our life-cycle cost model.

Cheryle A. Broom  
Legislative Auditor

On January 10, 1997, this report was approved by the Joint Legislative Audit and Review Committee and its distribution authorized.

Senator Al Bauer  
Chair

---

---

# RECOMMENDATIONS

## Summary

---

### *Recommendation 1*

The legislature should consider either eliminating all future funding for the staff housing units at Naselle Youth Camp or requiring that rents be set high enough to cover all associated costs.

Legislation Required:	Potentially
Fiscal Impact:	Will end current subsidization of staff housing
Completion Date:	1997 Legislative Session

### *Recommendation 2*

The Juvenile Rehabilitation Administration should amend its capital plan to provide for the earliest possible replacement of the housing units identified in this report as being non-cost-effective. If the Juvenile Rehabilitation Administration determines that certain units should not be replaced for programmatic reasons, it should specify what those reasons are and what steps it will take to improve their cost-effectiveness.

Legislation Required:	No
Fiscal Impact:	Annualized savings of up to \$2.5 million per year
Completion Date:	September 1, 1997

### *Recommendation 3*

The Juvenile Rehabilitation Administration should further amend its capital plan to provide for the consolidation of Indian Ridge and Mission Creek at:

- a) Green Hill School, assuming forecasted population levels do not increase substantially beyond currently forecast levels; or
- b) Maple Lane, in the event that forecasted population levels increase beyond currently forecast levels to the point where consolidation at Green Hill would not be practicable.

Legislation Required:	No
Fiscal Impact:	Annualized savings of up to \$1.3 million per year
Completion Date:	September 1, 1997

***Recommendation 4***

The Juvenile Rehabilitation Administration should develop an ongoing master planning process that incorporates the type of analytic tools utilized in this study.

Legislation Required:	No
Fiscal Impact:	Will help facilitate future savings
Completion Date:	September 1, 1997

***Recommendation 5***

In reviewing any Juvenile Rehabilitation Administration capital requests for new or replacement housing units, the legislature should be provided analysis on whether such projects meet benchmarks of capital and operating efficiency.

Legislation Required:	No
Fiscal Impact:	Will help facilitate future savings
Completion Date:	1997 Legislative Session

***Recommendation 6***

The Juvenile Rehabilitation Administration should incorporate a thorough and ongoing review of alternative construction methods into its capital planning processes. If these methods show the potential for reducing life-cycle capital costs, the bidding and predesign process for projects should be structured so as to allow for competition from these methods.

Legislation Required:	No
Fiscal Impact:	May help facilitate future savings
Completion Date:	Ongoing

***Recommendation 7***

The Juvenile Rehabilitation Administration should further develop and apply a staffing model for its housing units and institutional support services that rely on cost-effective benchmarks.

Legislation Required:	No
Fiscal Impact:	Will reduce operating budget
Completion Date:	Development by November 1, 1997 Implementation by June 30, 1999

---

# BACKGROUND

## Chapter One

---

**T**he Juvenile Rehabilitation Administration (JRA) within the Department of Social and Health Services currently operates six secure facilities for the custody and treatment of juvenile offenders. Combined annual operating costs are approximately \$47 million. Per bed costs are approximately \$52,800 per year, which is more than twice as high as in the adult system.

In late 1995, the Joint Legislative Audit and Review Committee (JLARC)<sup>1</sup> had already made plans to conduct a study of JRA facility costs, focusing specifically on the impact of housing unit design on staffing requirements and overall operating costs. An earlier study conducted by a committee of the adult correctional system had found that, at least in some cases, significant cost savings could be achieved by remodeling or replacing older housing units.

In the 1996 Supplemental Budget, JLARC was mandated to conduct a somewhat similar study of “staffing models and staff deployment” at the juvenile institutions. The final study scope and objectives were developed to address both the mandated study issues, as well as those included in JLARC’s initial study plans. Specifically, this study reviews both the capital and operating costs of JRA’s major residential facilities, and seeks to identify whether efficiencies and cost savings can be realized. Major objectives include:

- Determining whether JRA’s capital planning process results in cost-effective practices and projects;

---

<sup>1</sup> Then known as the Legislative Budget Committee.

---

## Overview

---

## Study reviews capital and operating costs

- Assessing the relative efficiency of current and planned facilities and determining whether they are being used in the most cost-effective manner; and
- Assessing the costs and benefits of replacing existing facilities with new facilities.

## JRA FACILITY OVERVIEW

Six current facilities . . .

Exhibit 1 presents an overview of the major residential facilities operated by JRA. The three largest facilities (Green Hill, Maple Lane, and Echo Glen) are referred to by JRA as “institutions.” Each operate both medium and maximum security units, and offer what is primarily an academically-oriented program. Housing units at these facilities have typically consisted of small, 15- to 16-bed “cottages.”

The three other facilities (Naselle, Mission Creek, and Indian Ridge) are referred to either as youth camps or forestry camps. They provide medium security confinement (no maximum security) and a work-oriented program in addition to the academic program. For some residents, the work program entails working on forestry crews under the supervision of the Department of Natural Resources. Housing units at these facilities currently tend to be larger, ranging in size from 24 to 60 beds.

. . . two more opening in 1997

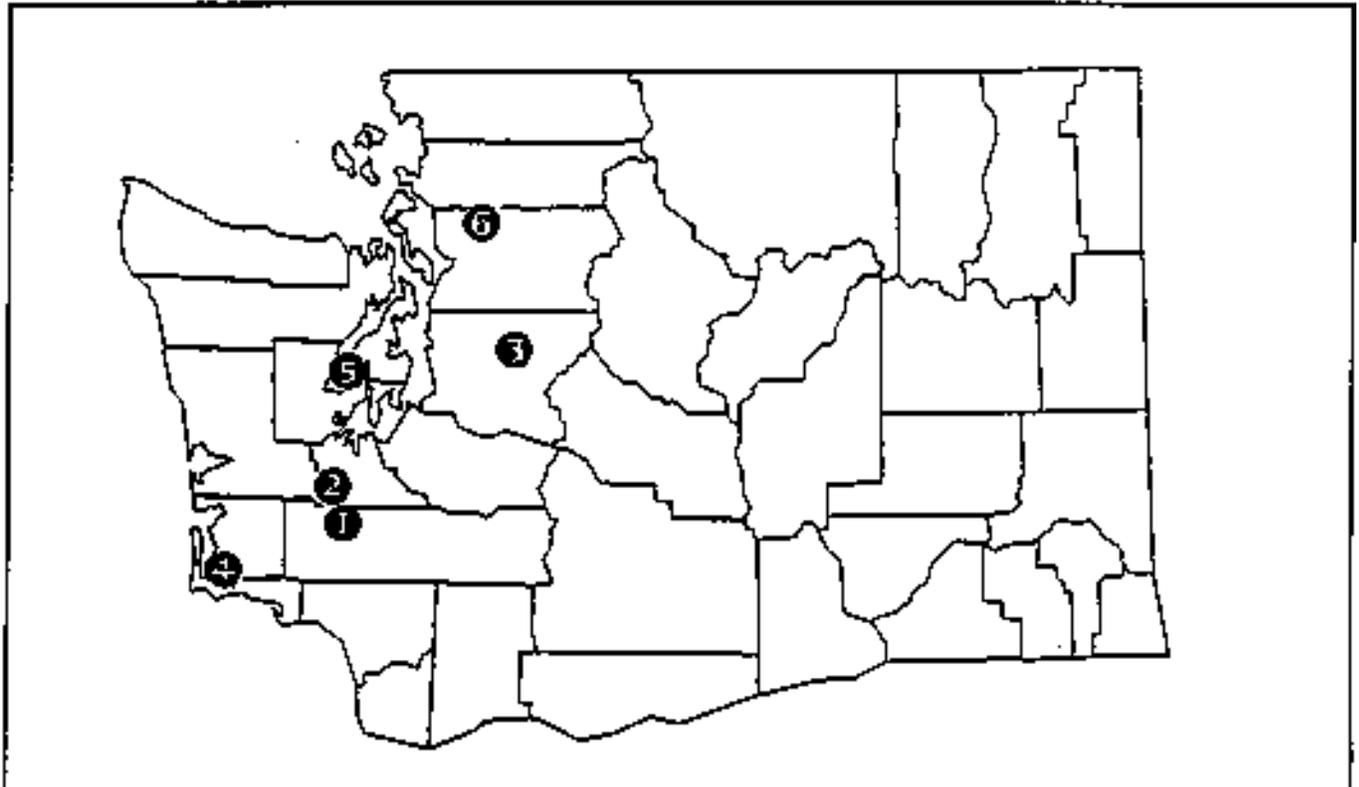
Two additional facilities are also expected to open in early 1997: a 48-bed Basic Training Camp which will be located in Connell, and an 80-bed unit located on the grounds of Eastern State Hospital in Medical Lake that JRA expects to operate as a temporary facility.

It should be kept in mind that one of the cost drivers of the juvenile system is its emphasis on treatment and rehabilitation.<sup>2</sup> JRA provides a basic core program of treatment and rehabilitative services at each of its facilities. This includes counseling and course work in such areas as victim empathy, self-responsibility and control, and respect for authority. At many of its facilities, JRA also offers more intensive and specialized treatment programs for substance abuse and mental health problems, as well as sex offender treatment programs.

---

<sup>2</sup>The provision of “necessary treatment” for juvenile offenders is listed as being one of the “equally important purposes” of the state’s Juvenile Justice Act (RCW 13.40.010(f)).

### Exhibit 1 Overview of Major JRA Residential Facilities



Facility/Location	Rated Capacity*	General Description	Housing Unit Overview
1) Green Hill School, Chehalis	144	Offers academic and pre-voc training to older, more serious male offenders	Nine 16 bed cottages
2) Maple Lane School Grand Mound	260	Academically oriented program for older serious and middle offenders	Eight 15-16 bed cottages, three 24 bed units, one 64 bed unit
3) Echo Glen Children's Ctr. Snoqualmie	206	Academically oriented program for females and the youngest males	Thirteen 16 bed cottages
4) Naselle Youth Camp Naselle	146	Offers work and academic program to younger middle offenders	Three 24 bed units, one 28 bed unit, one 48 bed unit
5) Mission Creek Youth Camp Belfair	60	Forestry work experience and school program for older middle offenders	One building with three 20 bed wings of 2 and 4 person rooms
6) Indian Ridge Youth Camp Arlington	76	Offers forestry work, pre-voc and academic program to older offenders	One building with four dorm-like rooms, and one 16 bed unit
<b>Total</b>	<b>896</b>		

\* As of December, 1985

## THE 1995 FACILITY MASTER PLAN

JRA does not have an ongoing master planning process. However, in 1994 the legislature appropriated \$300,000 to JRA to develop a comprehensive master plan for juvenile facilities. The plan was to include a comprehensive analysis of future facility needs, as well as an assessment of existing facilities. A major focus was on assessing these facilities for their “build-out” potential to handle additional capacity. JRA contracted with the firm of NBBJ to prepare and develop the plan.

The plan was commissioned and developed at a time when JRA institutional populations had been increasing rapidly, and numerous proposals were being advanced to “toughen” juvenile sentencing practices—which would increase the need for beds even more. The legislation directing the development of the Master Plan stated that it was “the intent of the legislature to consider design and construction of additional facilities or other methods to increase capacity in the 1995-1997 Biennium.”

The plan was successful in providing a comprehensive overview of JRA facilities, and in identifying “physical” options for system expansion. A major shortcoming, however, was that the plan contained only minimal economic analyses of the major capital alternatives. In all but one instance in which economic analyses of alternatives would have been appropriate, such analyses were not done. In that one instance—a comparison of the cost-efficiency of two construction methods—the analysis was technically flawed and rested on questionable assumptions. A discussion, with examples, of how economic analyses can be used in capital planning is included in Chapter 4: Opportunities for Cost Savings. A discussion of alternative construction methods is contained in Chapter 5: Further Efficiencies.

---

### 1995 plan contained minimal economic analysis

Nevertheless, the Master Plan did serve as the basis for JRA’s 1995-97 capital plan and budget request. The request, which was mostly funded by the 1995 Legislature, included a variety of repair and infrastructure related projects, as well as two immediate capacity building projects: a 48-bed work camp at Echo Glen and the Plan’s major project, the re-building and expansion of Green Hill School.

## THE REBUILDING OF GREEN HILL SCHOOL AND THE DEVELOPMENT OF THE HOUSING UNIT PROTOTYPE

The Master Plan called for rebuilding Green Hill School and expanding its capacity from 144 to 254 beds, at a cost of \$38.8 million. New capacity was to be housed primarily in five 30-bed medium security housing units.

In the fall of 1995 a new juvenile institution population forecast was released by OFM that was significantly higher than the previous forecast on which the Master Plan had been based. This led to expanding the original Green Hill plan even further, from 254 beds to 416 beds. The estimated cost for the 416 beds is approximately \$52 million.

A key feature of the Green Hill project has been the development of what is referred to as the Housing Unit Prototype. This is a 64-bed unit that consists of four 16-bed wings. Because of its design, it offers the promise of substantial staffing efficiencies when compared to many older housing units. It also serves as the basis for a good portion of our analysis throughout this study. The current plan for Green Hill calls for building six of these units.

At the present time, work on the Green Hill project is progressing. JRA has only secured funding to construct three of the prototype units, however, which will give it a capacity of 224 when the units open in the spring of 1998. In addition, JRA has also received funding to build out the facility's infrastructure to the level necessary to accommodate 416 residents. JRA will seek funding from the 1997 Legislature to build the additional three prototype units.

---

**Housing  
unit  
prototype  
is more  
efficient**

---

# SYSTEM NEEDS: JRA POPULATION FORECAST VERSUS CURRENT AND PLANNED CAPACITY

## Chapter Two

---

**T**he newest 1997 JRA institutional population forecast is substantially lower than the 1996 forecast. Current and *already-funded* new capacity is now expected to exceed the forecasted population for the next several years—barring any major changes to current sentencing practices. This casts doubt on the need to proceed with any additional capacity building projects at this time.

The above is based on “rated capacity” levels. If the higher “maximum operating capacity” level is considered, the amount of excess capacity increases even more. Which level should be used for capacity planning purposes is an issue which should be decided by the legislature.

### JRA POPULATION FORECAST

Each fall OFM prepares a ten-year “Juvenile Rehabilitation Administration (JRA) Institutional Population Forecast.”<sup>1</sup> The newest, 1997 forecast, which was released in October 1996, is substantially lower than the 1996 forecast, by an average of 121 beds per month in FY 1997. This is significant since it was the 1996 forecast that resulted in plans to build Green Hill School out to a level substantially beyond that originally proposed in the 1995 Master Plan. The 1997 forecast actually tracks quite closely to the 1995 forecast as shown in Exhibit 2.

Although not shown in Exhibit 2, the 1997 forecast extends through the year 2016. Because of an expected decrease in the total juvenile

---

<sup>1</sup> The forecast is based on policies and sentencing laws in effect at the time of the forecast.

---

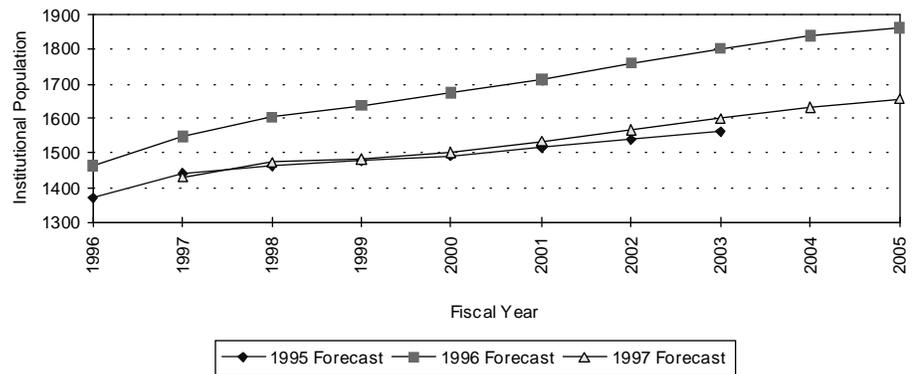
## Summary

---

1997  
forecast  
lower than  
previous  
one

population beginning around the year 2008, the “long-term” trend line does not continue to increase. In fact, whereas the projected population for 2005 is 1,655, it actually decreases to 1,639 in the year 2016.

**Exhibit 2  
Comparison of Last Three JRA Institutional  
Population Forecasts (Average Annual  
Population – Adjusted for Seasonalization)**



## CURRENT AND PLANNED SYSTEM CAPACITY

### Facilities and Projects Included

Exhibit 3 depicts current and “formally planned” JRA system capacity through FY 2004, and compares it to the latest 1997 population forecast. Included are the following new, and already-funded, capacity building projects:

### New capacity building projects

- A new 48-bed work camp at Echo Glen, scheduled to come on-line in 1999;
- The three new 64-bed “prototype” units at Green Hill, scheduled to open in 1988 (because existing housing units will be demolished, the net increase is only 80 beds);
- A 48-bed Basic Training Camp, scheduled to be phased in beginning in early 1997;<sup>2</sup> and
- The 80-bed Medical Lake Treatment Center, at Eastern State Hospital, scheduled to open in 1997.

Two additional projects that have received some legislative consideration, but have not yet been funded, are also included in Exhibit 3:

<sup>2</sup>This camp will be operated by a private organization, under contract to JRA.

**Exhibit 3**  
**Current and Planned Average Annual JRA System Capacity, At Both Rated and Maximum Operating Capacity**  
**Compared to 1997 Population Forecast**

Facility	FY 1997		FY 1998		FY 1999		FY 2000		FY 2001		FY 2002		FY 2003		FY 2004	
	Rated	MOC														
Echo Glen <sup>[1]</sup>	208	236	208	236	232	263	256	290	256	290	256	290	256	290	256	290
Maple Lane	260	300	260	300	260	300	260	300	260	300	260	300	260	300	260	300
Green Hill <sup>[2]</sup>	144	168	171	195	224	248	288	320	416	464	416	464	416	464	416	464
Nasalle	148	164	148	164	148	164	148	164	148	164	148	164	148	164	148	164
Mission Creek	60	72	60	72	60	72	60	72	60	72	60	72	60	72	60	72
Indian Ridge	76	84	76	84	76	84	76	84	76	84	76	84	76	84	76	84
Basic Training Camp <sup>[3]</sup>	20	20	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Medical Lake Treat. Ctr. <sup>[4]</sup>	19	19	80	80	80	80	80	80	80	80	57	57	0	0	0	0
New 300 Bed Facility <sup>[5]</sup>	0	0	0	0	0	0	0	0	0	0	63	71	300	338	300	338
Sub-total	935	1063	1051	1179	1128	1259	1216	1358	1344	1502	1383	1549	1564	1760	1564	1760
Community Beds <sup>[6]</sup>	385	385	389	389	389	389	389	389	389	389	389	389	389	389	389	389
Total	1320	1448	1440	1568	1517	1648	1605	1747	1733	1891	1772	1938	1953	2149	1953	2149
1997 Pop. Forecast	1430		1472		1484		1504		1534		1565		1602		1633	
BTC Adjustment <sup>[7]</sup>	-32		-35		-35		-35		-35		-35		-35		-35	
Adjusted Forecast Pop.	1398		1437		1449		1469		1499		1530		1567		1598	
<b>Over / Under</b>																
- As shown above	-78	50	2	130	68	199	136	278	234	392	242	408	386	582	355	551
- With currently funded projects only	-78	50	2	130	68	199	72	206	42	176	11	145	-26	108	-57	77

**Capacity levels shown as being "boxed-in" include projects not currently funded – see notes below**

Notes:

- [1] New 48 bed workcamp scheduled to open in January, 1999.
- [2] Three new 64 bed units scheduled to open in March, 1998. Three additional units -- not currently funded -- shown as opening in March, 2000.
- [3] Basic Training Camp scheduled to begin phasing in in January, 1997, and reaching full capacity in March, 1997.
- [4] Medical Lake Treatment Center scheduled to begin phasing in in February, 1997, and reaching full capacity in June, 1997 (and closing when the new 300 bed facility opens).
- [5] New 300 bed facility -- not currently funded -- shown as being phased in beginning in March, 2002, and reaching full capacity in June, 2002. These dates are speculative.
- [6] Number of community beds provided by JRA. Current full capacity for these beds is 431.
- [7] Per statute, juveniles attending the Basic Training Camp will receive reductions in their sentences. This adjustment quantifies the expected impact.

- The three additional 64-bed prototype units at Green Hill. As noted in Chapter 1, the re-building project now underway includes building out the facility’s infrastructure to accommodate these additional housing units; and
- A new 300-bed facility to be located in Eastern Washington. This project was first suggested in the 1995 Master Plan, and has received legislative funding for site selection work.

Exhibit 3 **does not include** two additional capacity-increasing projects contained in JRA’s recently released 10-Year Capital Plan.<sup>3</sup> These newly proposed projects would increase rated capacity by an additional 38 beds at Maple Lane and 32 beds at Indian Ridge. This plan also includes the additional Green Hill prototypes and the new 300-bed facility noted above.

### Rated Capacity Versus Maximum Operating Capacity

---

## Two different capacity levels

A significant issue when comparing forecasted population to capacity is how to define capacity. Exhibit 3 presents figures provided by JRA<sup>4</sup> for two different capacity levels: “rated capacity,” and “maximum operating capacity,” or MOC.

- **Rated Capacity** is broadly defined by JRA as being based on a “recognized space standard” of 70 square feet per youth in a single room, or 50 square feet per youth in a dorm or multiple occupancy sleeping room.<sup>5</sup> Individual rooms at JRA facilities range in size from 67 square feet at Echo Glen to 94 square feet at Green Hill, but all are considered single rooms for purposes of determining rated capacity.

---

<sup>3</sup> Contained within the Department of Social and Health Service’s 10-Year Capital Plan, and released in September 1996.

<sup>4</sup> The MOC figures for the new Echo Glen work camp and the new 300-bed facility were developed by the study team rather than being provided by JRA staff. The figures are comparable to those provided by JRA for other similar facilities, however.

<sup>5</sup> Although JRA has indicated this is the American Correctional Association’s (ACA) standard for juvenile facilities, it is actually an old ACA standard. Based on the 3rd edition of the standards (dated January 1991), the current standard calls for 35 square feet of unencumbered space per occupant, for anywhere from 1 to 50 youths – with unencumbered space being defined as useable space that is not encumbered by furnishings or fixtures.

- **Maximum Operating Capacity**, as used by JRA, refers to its “ability to crowd living units . . . above the rated capacity for sustained periods.” It is usually accomplished by double or triple bunking a portion of the sleeping rooms. JRA’s policy is to not operate maximum security or specialized treatment living units above rated capacity. In FY 1997, MOC exceeds rated capacity at the six major institutions by a combined total of 13.7 percent.

JRA claims that at the MOC level, some of a facility’s infrastructure systems (e.g., mechanical, waste treatment) may become stressed beyond design. In information provided to the study team, JRA also noted that “[b]ecause line staff are responsible for treatment and custody functions, rehabilitative treatment always decreases as crowding increases.”

Despite JRA’s reservations about operating at MOC, the reality is that it has operated most of its facilities at or above this level for most of the past three years. In information prepared for the 1996 Legislative Session on how to reduce crowding in its facilities, which was quite significant at the time, JRA indicated its goal was to “maintain [average daily population] at 90 percent of Maximum Operating Capacity.” For this study, JRA has indicated its goal is to operate at rated capacity.

### The Bottom Line

Current and planned JRA capacity is now expected to exceed the forecasted population for the next several years, assuming the continuation of existing sentencing policies and practices. With the exception of FY 1997, this is the case no matter which capacity level is considered. Between FY 1998 and 2002, and considering *already funded projects only*, rated capacity will exceed the population forecast by a range of 2 to 72 beds. Maximum operating capacity will exceed the forecasted population by a range of 130 to 206 beds.<sup>6</sup>

---

<sup>6</sup> These numbers are based on *annual averages* for both capacity and population; i.e., the sum of the monthly levels divided by twelve. This measure provides a good overview of the year as a whole. In any year, however, the highest monthly variance will be more than the average annual variance. During the time period referenced, there could be a temporary deficit of up to 40 beds at rated capacity. At maximum operating capacity, however, there would always be a surplus of at least 88 beds.

---

Most facilities operated at MOC level

---

Planned capacity expected to exceed population

These numbers cast doubt on the need to proceed with any capacity building projects at this time. This includes the new 300-bed facility in Eastern Washington as well as the two additional new capacity building projects included in JRA's recently released 10-Year Capital Plan. The numbers also cast doubt on the need to proceed with building the additional three prototype units at Green Hill for capacity building purposes. However, as will be shown later, some additional expansion of Green Hill for *replacement* beds offers the promise of substantial cost savings.

---

Legislature  
should  
decide  
capacity  
level for  
planning  
purposes

Finally, in past legislative sessions, JRA's capital budget requests have often been tied to rated capacity. This study made no attempt to assess the relative legitimacy of either of the two capacity levels, or to determine which was the most appropriate. The very fact that JRA has been able to operate at a level higher than rated capacity, however, raises the issue of whether a higher level might be appropriate when planning for future capital needs. The budget implications are obviously significant. Ultimately this is a policy decision which should be decided by the legislature.

---

# JRA FACILITY COSTS

## Chapter Three

---

**T**he annual operating costs for the six JRA facilities currently average \$52,800 per bed at rated capacity. By 1998, the annual cost per bed will be lower, approximately \$50,500, since there will be additional beds open at Green Hill and at a seventh facility to be operated by JRA in eastern Washington.

Our analysis shows that as the size of a housing unit increases, or the size of a facility increases, the cost per bed significantly decreases. Thus size or “scale” is a primary cost driver for the JRA system.

Current capital costs for the six facilities, annualized over 50 years, average approximately \$8,700 per bed. One capital cost that stood out in our review related to staff housing at Naselle Youth Camp; the only facility to provide such housing for some of its employees. Since JRA officials indicate there is no programmatic need for this housing, a recommendation is made to eliminate future funding for these units or raise rents to a level sufficient to cover costs.

## TOTAL COSTS

There are three agency budgets that cover the cost of incarcerating a juvenile in a Washington State facility, and the funding source for all three is the General Fund. The largest category is operating costs, which includes facility staffing, and clothing and feeding juveniles. A much smaller category, but still significant, is the capital cost to the state for housing juveniles and providing associated support facilities reflected in annual debt service. And finally, there is the category of cost to the Office of the Superintendent of Public Instruction (OSPI) for providing educational services in a JRA facility rather than within the regular public school system. A

---

## Summary

---

**Largest  
category is  
operating  
costs**

breakdown of these three costs appear in Exhibit 4. Note that the first category, operating costs for the facilities, represents about 80 percent of the total cost.

**Exhibit 4**  
**Major Costs for Incarcerating a Juvenile in Washington State (FY 1996 Dollars)**

Category (Associated Agency Budget)	Annual Cost Bed at Rated Capacity
Operating Cost <sup>1</sup> (JRA)	\$50,500
Capital Debt Service <sup>2</sup> (State Treasurer)	\$8,700
Educational Costs Above Base <sup>3</sup> (OSPI)	\$4,100
<b>Total Cost</b>	<b>\$ 63,300</b>

**OPERATING COSTS**

**Average cost over \$50,000 per bed**

In FY 1998, the seven JRA facilities will have a combined rated capacity of 1,056 beds and an estimated average operating cost of approximately \$50,500 per bed. Our analysis of the individual facilities at rated capacity indicates that their annual base budgets will range from a low of \$44,500 to a high of \$54,000 per bed. The three camp facilities will be less expensive on a per bed basis than the three main institutions or the new beds at Medical Lake.

Operating costs in the juvenile system are more than twice as much per year as in the adult system (\$52,800 versus \$24,000 per bed in FY 96.) This is one of the reasons the legislature directed JLARC to identify the primary cost drivers in the juvenile system.

**Primary Cost Drivers**

A review of facilities' operating budgets at rated capacity shows that labor accounts for 85 percent of operating costs as shown in Exhibit 5.

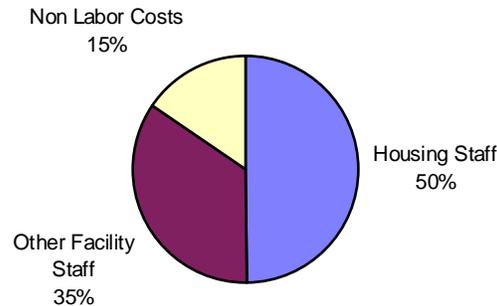
<sup>1</sup> Since costs are changing due to current capital projects, this average is based on FY 1998 rated capacity operated by JRA. The department also has a contract with a private company to operate a 48-bed boot camp at a cost of \$45,000 per bed.

<sup>2</sup> This is an annualized per bed equivalency that is provided here to show the proportionate relationship between annual capital and operating costs. Real debt service and new capital expenditures vary greatly from year to year.

<sup>3</sup> School districts serving students in school year 1995-96 actually received \$8,500 to provide educational services. The \$4,100 in the table is the difference between the apportionment of \$8,500 and the average expenditure per student of \$4,400 for the same year. The \$4,100 is based on a key assumption that the juvenile would be in school if not in a JRA facility, otherwise the cost would be the full \$8,500.

**Exhibit 5**

**Breakdown of Major Operating Costs within JRA  
in FY 1998  
(Average Cost = \$50,500 per bed in FY 1996 Dollars)**




---

**85% of cost  
attributed  
to staffing**

For the purpose of analyzing cost drivers, it is helpful to divide the total cost of labor into two subcategories. As this chapter further elaborates, the impact of size, or scale, on each subcategory is essential to understanding and reducing costs in JRA. The principle of economies of scale (that higher volumes reduce unit costs, or in this case, per bed costs) is applicable here.

**Housing Unit Size**

In 1996, JRA operated 42 separate housing units in 6 different facilities. (A housing unit is a discrete area where cells/beds are clustered. A unit can be a freestanding building or a wing within a larger configuration.) As Exhibit 5 illustrates, staffing for these units account for 50 percent of the total costs of operating the facilities.

JRA has recently developed a staffing “model” for housing units that capitalizes on efficiencies that are possible within larger units. Details of the staffing model show that efficiencies are possible in larger housing units because the cost of some positions, such as the night security officer or the unit supervisor, are spread over a larger population, thereby reducing costs on a per bed basis. (Actual staffing and the staffing model are discussed further in Chapter 5 of this report.)

---

**JRA has  
new  
staffing  
model**

**Exhibit 6**

<b>Unit Size Rated Capacity</b>	<b>Cost of JRA Staffing Model Medium Custody</b>
16 Bed Units	\$27,500
24 Bed Units	\$24,198
48 Bed Units	\$20,961
64 Bed Units	\$20,189

---

**Smaller housing units and facilities are costly**

As Exhibit 6 shows, the smaller units are more expensive due to diseconomies of scale. Of the 42 units in the JRA system, 38 of them are smaller than 30 beds.<sup>4</sup> The larger size units shown in Exhibit 6 are located at camps. Housing unit size is a major reason why JRA camps have traditionally operated at a lower cost per bed than main institutions. New, larger-sized units are currently under construction at Green Hill.

**Facility Size**

The seven juvenile facilities that will be operating in FY 1998 range in size from 60 beds to 260 beds.<sup>5</sup> The influence of scale on per bed cost was apparent in our analysis of facilities' budgets. For example, per bed costs for business and administrative services are \$4,100 at Maple Lane (at 260 beds), whereas it is \$6,200 at Indian Ridge (at 76 beds.)<sup>6</sup> This is because the cost of certain "fixed" positions such as Superintendent, Business Manager, and other positions less sensitive to changes in population, are spread over larger populations resulting in a lower cost per bed.

**Green Hill Project and Economies of Scale**

The Green Hill expansion project provides a good illustration of the impact that housing unit and facility size can have on per bed cost. The first phase of the project (which has already been funded) includes replacing 112 beds from seven 16-bed units with three prototype units at 64 beds each, for a net gain of 80 beds. The 16-bed units being replaced have an average annual operating cost of approximately \$30,400 per bed, while the 64-bed prototypes will have an annual operating cost of approximately \$20,200 per bed.

---

**Green Hill illustrates economies of scale**

---

<sup>4</sup> In contrast, the adult system in Washington usually has hundreds of beds in each unit.

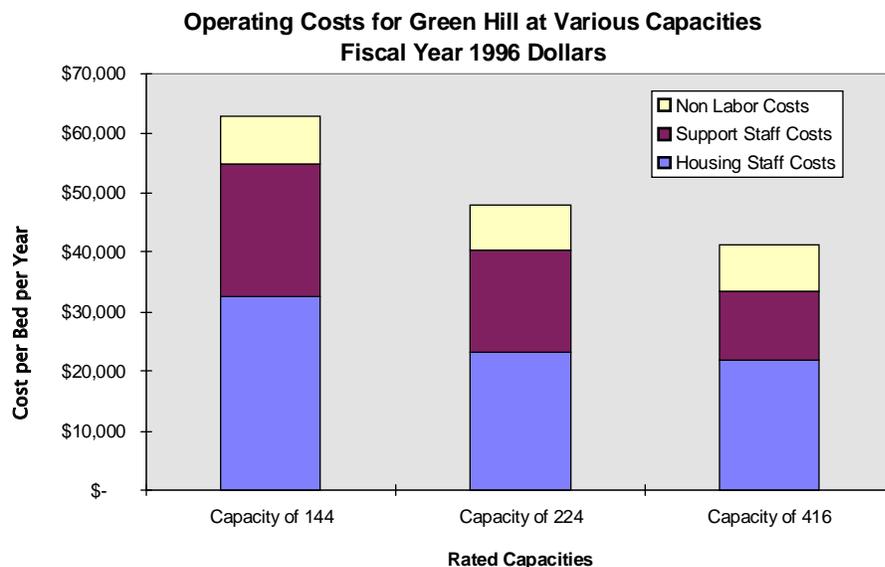
<sup>5</sup> In contrast, the smallest adult institution in FY 1998 will be 350 beds.

<sup>6</sup> Business and administration responsibilities at each are comparable. Average salaries were used in the analysis of operating costs to make comparison more accurate.

Future expansion plans for Green Hill call for building three additional prototype units. If these housing units are added, overall cost per bed of the facility will decrease due to further economies.

Exhibit 7 shows the per bed cost of Green Hill before the project began (capacity of 144), at the currently funded level (capacity 224), and at full build out according to the master plan (capacity 416.) As the bars illustrate, sizable efficiency gains are made when the institution replaces the existing small housing units with the prototype as it goes from 144- to 224-bed capacity. Moving from capacities of 224 to 416, efficiency gains continue due to economies of scale in institutional support services.<sup>7</sup>

**Exhibit 7**



Per bed costs decrease as facility size increases

Annual operating costs per bed at Green Hill will be reduced from \$63,000 at a capacity of 144 to \$41,000 at a capacity of 416. At a capacity of 416, Green Hill would be the most cost efficient in the JRA system (assuming no changes at other facilities).

**The Rehabilitation Mandate**

A fundamental difference between the adult system and the juvenile system in Washington is that JRA is required to not only house

<sup>7</sup> "Support" would be any functions outside the living units, including plant maintenance, food service, the warehouse, medical and dental services, chaplain services, and business office.

committed juveniles, but to provide the “necessary treatment” for rehabilitation. The entire cost of this mandate is not readily quantifiable since the line between “treatment” and security is often blurred. For example, staff that work in juvenile housing units are classified as juvenile rehabilitation counselors. These counselors perform security functions (room checks, escorting juveniles, headcounts) but also provide group and individual counseling and act as liaisons with the court system.

---

## One counselor for every 4 youths

One way JRA carries out its rehabilitation mandate is to have a policy of maintaining one counselor for every four youths and providing a core treatment program for all juveniles, augmented by specialized treatment programs as needed. The one to four ratio of counselors to youths is based on historical patterns and is what the agency believes is necessary for effective interaction between staff and juveniles. This study did not evaluate the appropriateness of this ratio, but it is clearly a major cost driver in the system. When facilities are operating at rated capacity, counseling staff account for almost half of the FTEs.

Another manifestation of JRA’s mandate to provide rehabilitation is the designation of certain housing units as residential treatment beds. Almost 20 percent of the system’s rated capacity in FY 1996 was devoted to specialized treatment programs for one of three areas: drug and alcohol, sex offender, or mental health. The special treatment units are usually more staff intensive than core housing units.

## CAPITAL COSTS

---

## Capital costs: \$8,700 per bed

The current annual equivalent capital cost for all JRA facilities, calculated over a fifty year period, is approximately \$8.9 million or about \$8,700 per bed.<sup>8</sup> This figure is comprised of the three major components shown in Exhibit 8.

---

<sup>8</sup> Our estimate of capital costs includes the cost of currently funded, new construction projects. This includes the three new housing prototype units at Green Hill and the 48-bed work camp at Echo Glen. Also, see Exhibit 9 for a description of the model we used to calculate capital costs.

**Exhibit 8**

Cost Component	Total Annual Equivalent Costs	Per bed Costs
Current new construction and remodeling projects, including an allowance for periodic repair and replacement	\$2.7 million	\$2,604
Future remodeling and replacement costs, including an allowance for periodic repair and replacement	\$3.3 million	\$3,248
Debt Service on past projects	\$2.9 million	\$2,849

Just under 40 percent of JRA’s total capital costs are directed towards housing units.

**Staff Housing At Naselle Youth Camp**

In comparing capital costs among JRA facilities, one cost that stood out related to staff housing at Naselle Youth Camp, which is the only facility that provides such housing for some of its staff. There are a total of 27 staff housing units at the facility, including six four-plex units, one duplex, and one single family residence (the Superintendent’s house).

Rent is charged for these units, but the amounts are nominal: \$92 per month for the four-plex units, \$135 per month for the duplex units, and \$160 per month for the house. The total amount of rent received annually is less than \$30,000. Including the cost of a new sewer line, over \$230,000 worth of major repairs have been done on these units since 1987. In addition, JRA has identified over \$700,000 in repair work (in 1996 dollars) that needs to be done over the next ten years.

---

**Rents do not cover costs**

In response to our question, JRA Headquarters’ staff stated that there was “no programmatic need” for these units. In light of this, we see no need to expend further state resources on them.

**RECOMMENDATION**

***Recommendation 1***

*The legislature should consider either eliminating all future funding for the staff housing units at Naselle Youth Camp or requiring that rents be set high enough to cover all associated costs.*

---

# OPPORTUNITIES FOR COST SAVINGS

## Chapter Four

---

**T**he new prototype housing unit offers significant operational savings in comparison to many of the existing housing unit types at JRA facilities. Our analysis shows that there are a number of instances where cost savings could be maximized by the earliest possible replacement of existing units with these prototype units. Significant cost savings could also be achieved by consolidating the Indian Ridge and Mission Creek facilities at Green Hill. Finally, the fact that there are such significant savings to be identified indicates there is a need for JRA to develop an on-going master planning process that incorporates the types of analytic tools utilized in this study.

### INTRODUCTION

Because of its size and design efficiencies, the 64-bed housing prototype model developed by JRA can be expected to eventually result in reduced system costs; that is, as the units are built to replace existing housing units once they have reached the end of their useful life lives.

Using the prototype as a benchmark of efficiency, we conducted a review of JRA facilities to assess their current level of cost effectiveness, and to determine whether cost savings can be achieved. Specifically, we looked at each individual facility to see if cost savings could be achieved by replacing their existing housing units with one or more prototype units. We also looked at various “cross-facility” strategies to see if other efficiencies could be realized. This chapter presents the results of our analysis.

---

### Summary

---

Prototype  
used as  
benchmark  
of efficiency

The process that we followed can be used not only to assess current facilities, but also to compare the relative cost-effectiveness of alternative capital proposals. It is this economic and analytic component that was missing in the 1995 master plan.

## THE JLARC CAPITAL COST MODEL

We developed a capital cost model, which is summarized in Exhibit 9 (on the following page), to assist in our analysis. An important feature of this model is that it can incorporate operating costs. As noted in Chapter 3, the operational costs are based on existing staffing practices for each facility and individual housing unit as reported by JRA. Staffing figures for the new prototype unit were also provided by JRA.

A key feature to keep in mind is that the model depicts costs as an *annual equivalent amount*, expressed in current 1996 dollars, and calculated over a 50-year period. In other words, it is an amount equal to the average expense that could be expected to be incurred over each of the next fifty years.

---

Costs are  
"annual  
equivalent  
amounts"

## **Exhibit 9**

### **The JLARC Capital Cost Model - An Overview**

#### **What It Does**

The model calculates an overall capital cost for every building at each of the different institutions, viewed over a 50-year time period. All major cost factors are accounted for,<sup>1</sup> *including the costs of replacing the building once it has reached the end of its useful life.*

#### **What the Numbers Represent**

The numbers, which are expressed in constant 1996 dollars, represent an *annual equivalent amount*, calculated over a 50-year period. In other words, it is an amount equal to the average expense that would be incurred over each of the next fifty years. It is *not* a “budget-type” figure. Actual cash flow will vary over time; this figure will not.

#### **Uses and Examples**

By “plugging in” different assumptions, and by incorporating operating costs, the model can be used to compare the costs associated with different alternatives. For example, three alternatives were examined for each housing unit:

- Replacing the unit with a similar structure (i.e., same size and capacity) once it reaches the end of its useful life;
- Replacing the unit with the more efficient prototype design once it reaches the end of its useful life; and
- Replacing the unit with the more efficient prototype design now.

#### **Major Data Sources and Assumptions**

Information on current building repair needs, and expected useful life, was provided by JRA. Future new construction costs (for replacing buildings once they have reached the end of their useful life) were based on figures originally developed separately for each building by the firm of NBBJ as part of the 1995 Master Plan.

For comparing building alternatives, the model uses a 10 percent real discount rate. Use of a rate this high results in figures that can be considered quite conservative. (See Appendix 3.)

---

<sup>1</sup> Including, as appropriate: original construction costs; past repairs, debt service and financing; currently known repair and remodeling needs; and an allowance for future periodic repair and replacement.

## COST REDUCING STRATEGIES

### Replacing Existing Units at Their Current Locations

There were a number of instances where we found that significant cost savings could be realized by immediately replacing existing housing units with one or more prototype units.

Exhibit 10 portrays the amount of savings that could be realized by replacing four older cottages at Maple Lane School (two 15-bed and two 16-bed cottages) with one 64-bed prototype unit. ***It is important to understand how to read the exhibit:***

- ◆ The second column presents what can be considered a status quo option. It identifies the annual equivalent cost of replacing these four units with “themselves”—meaning structures of the same capacity and same square footage, no matter how inefficient they may be—once they have reached the end of their estimated useful life (with estimates of remaining useful life being provided by JRA).
- ◆ The third and fourth columns present two cost-saving alternatives, with the “savings” being in comparison to the status quo option. The third column shows the savings which would be realized by replacing the existing units with a prototype unit once they have reached the end of their useful life. The fourth column shows the savings that would be realized by replacing the existing units with a prototype unit *now*.

Analysis compares status quo to two alternatives

**Exhibit 10<sup>2</sup>**

<b>Maple Lane School</b>			
<b>Replace Evergreen, Pine, Sequoia, and Spruce Cottages</b>			
Annual Equivalent Costs (in 1996 dollars)	Replace Units With Similar Structures At The End of Their Useful Life	Replace Units With Prototype Unit At The End of Their Useful Life	Replace Units With Prototype Unit Now
Capital Costs	\$133,174	\$108,069	\$220,791
Operating Costs	\$1,738,899	\$1,539,195	\$1,251,746
Total Costs	\$1,872,072	\$1,647,264	\$1,472,537
Total Savings		\$224,808	\$399,535
Per bed Savings		\$3,626	\$6,444

<sup>2</sup> Cost figures are annual equivalent amounts, expressed in current dollars, and calculated over a 50-year period.

In this case, the prototype unit is significantly more efficient, in terms of its associated operating costs, than the four existing Maple Lane units. Because of this efficiency factor, cost savings would be achieved by replacing these units with a prototype unit at almost any time, but the savings would be maximized by replacing them immediately or as soon as possible.

It must be remembered that the amounts in the table are annual equivalent amounts. On an actual cash flow basis, the annual savings would be less than that shown for the first five years, averaging \$248,000. Beginning in year six, however, the amount of savings increases substantially beyond that shown in Exhibit 10, and continues to increase for the next 45 years. A full 50-year cash flow analysis is presented in Appendix 4.

It should also be noted that the cost figures shown in Exhibit 10 are based on the rated capacity of the units. When calculated at maximum operating capacity, the amount of cost savings is still significant, but as shown below it is reduced substantially from the amounts based on rated capacity (\$399,535 total savings, and \$6,444 per bed savings).

Total Annual Savings:	\$230,916
Per bed Annual Savings:	\$ 2,566

As will be seen in Exhibit 11, the amount of the variance between savings based on rated capacity versus MOC differs depending on the particular scenario being considered.

Exhibit 11 also shows three other instances where we identified cost savings that could be realized by immediately replacing existing housing units with prototype units. In each of these examples, the general pattern shown in Exhibit 10 holds constant; that is, higher capital costs but significantly lower operating costs, and savings maximized by replacing the existing units immediately.

---

Savings maximized by replacing units immediately

---

Savings vary based on capacity level used

**Exhibit 11**

**Summary of Savings From Other Housing Unit Replacement Options<sup>3</sup>**

**Replacement offers savings**

Scenario	At Rated Capacity		At Max. Oper. Capacity	
	Total Savings	Per Capita Savings	Total Savings	Per Capita Savings
<b>Maple Lane School</b>				
Replace three 24-bed cottages with one prototype	\$78,116	\$1,085	\$104,379	\$1,243
<b>Echo Glen</b>				
Replace 8 16-bed cottages with two prototypes	\$669,841	\$5,233	\$394,493	\$2,529
Replace 12 16-bed cottages with three prototypes	\$1,005,647	\$5,238	\$711,458	\$3,234

The Maple Lane scenario in Exhibit 11 is particularly notable since the three cottages (Rainier, Pacific, and Olympic) are only three years old.

Echo Glen serves the youngest offenders in the JRA system, those ranging from 10 to 14 years of age. JRA staff have told us that for programmatic reasons, they would not be inclined to place children that young in housing units as large as the 64-bed prototype.

We did not assess programmatic criteria. It is apparent from the figures shown in Exhibit 11, however, that there is substantial room to achieve some amount of savings in comparison to the existing housing situation at the facility. If JRA considers the current prototype design inappropriate for this population group, it should seek to develop an alternative design that would be programmatically acceptable, but would still offer efficiencies.

**Consolidating Facilities**

**Consolidating facilities would result in savings**

We looked at the prospect of replacing existing housing units with prototype units at the three youth camps, but found it would not be cost effective. We did find that significant savings could be achieved, however, by consolidating the two smallest facilities, Indian Ridge and Mission Creek, at a larger institution. Exhibit 12 depicts the savings which could be achieved by closing Indian Ridge and consolidating it at Green Hill, by building an additional prototype unit at that facility.

<sup>3</sup> Cost figures are annual equivalent amounts, expressed in current dollars, and calculated over a 50-year period.

**Exhibit 12<sup>4</sup>**

<b>Indian Ridge</b>		
<b>Close Facility, and Consolidate at Green Hill</b>		
Annual Equivalent Costs (in 1996 dollars)	Continue to Operate Facility, Replacing Buildings With Similar Structures At the End of Their Useful Life	Close Facility Now, And Consolidate at Green Hill By Building Additional Prototype Unit
Capital Costs	\$335,439	\$270,647
Housing Staff Costs	\$1,553,161	\$1,534,398
Other Operating Costs	\$2,248,261	\$1,667,313
Transition Costs	n/a	\$28,306
Total Costs	\$4,136,860	\$3,500,665
Total Savings		\$636,195
Per bed Savings		\$8,371

As has been noted previously, Green Hill School is in the process of being rebuilt. Three prototype units are currently being built, as well as an infrastructure sufficient to accommodate up to three additional prototype units. Those additional units have been planned, but as noted in Chapter 2, the newest population forecast casts doubt on whether they will be needed for new capacity.

Cost savings in these consolidation scenarios are achieved not so much because of increased housing unit efficiency, but rather because of increased economies of scale. As can be seen in Exhibit 12, the greatest amount of savings is achieved in the area of non-housing unit staff. The capital cost is also less because by closing the facility, the costs of maintaining all of the buildings and then replacing them once they have reached the end of their useful life, is avoided.

Our estimates of cost savings through consolidation do not reflect any impacts on the Department of Natural Resources, because it is unknown at this time if closing one or two youth camps would necessarily reduce the number of inmate work crews used by this agency. Potentially there would be no impact. We also did not estimate the value of alternative uses of these facilities' land and buildings. Whatever value these would have would count in favor of consolidation.

---

**Savings  
from  
increased  
economies  
of scale**

---

<sup>4</sup> Cost figures are annual equivalent amounts, expressed in current dollars, and calculated over a 50-year period.

Exhibit 13 below shows the estimated cost savings associated with the option of consolidating Mission Creek at Green Hill, as well as the combined effect of doing both.

**Exhibit 13**  
**Summary of Savings From Other Consolidation Options<sup>5</sup>**

**Savings of \$1.2 million possible from consolidating**

Scenario	Total Annualized Savings	Per bed Annualized Savings
Close Mission Creek and consolidate at Green Hill by building an additional prototype unit	\$491,543	\$8,192
Close Mission Creek and Indian Ridge, and consolidate at Green Hill by building two additional prototype units	\$1,264,959	\$9,301

The total annualized savings achieved by consolidating *both* Indian Ridge and Mission Creek at Green Hill (\$1,264,959) is greater than the combined amount of the separate consolidation options (i.e., \$491,543 for Mission Creek plus \$636,195 for Indian Ridge equals \$1,127,738). This is because of the economies of scale that would be achieved in a larger facility as explained in Chapter 3.

**Using Existing Facilities More Efficiently**

Finally, we identified one option that combines replacement efficiencies with other savings that come from using existing facilities more efficiently. This option revolves around the 32-bed Intake Unit at Maple Lane, which is currently located in one of two wings of that facility’s new maximum security building. Programmatically, the intake unit does not need to be located in the maximum security building. Because it is, however, it is staffed at the more intensive maximum security level, which results in higher than necessary costs.

---

<sup>5</sup> Cost figures are annual equivalent amounts, expressed in current dollars, and calculated over a 50-year period.

**Exhibit 14<sup>6</sup>**

<b>Maple Lane School</b>			
<b>Combine Current Intake Unit and Two Other Cottages Into New Prototype Unit -- Close Two Maximum Security Units, Including One From Green Hill, And Move Into Current Intake Unit</b>			
Annual Equivalent Costs (in 1996 dollars)	Replace Units With Similar Structures At The End of Their Useful Life	Replace Units With Prototype Unit At The End of Their Useful Life	Replace Units With Prototype Unit Now
Capital Costs	\$163,887	\$135,972	\$220,791
Operating Costs	\$2,019,403	\$1,775,483	\$1,251,746
Total Costs	\$2,183,290	\$1,911,455	\$1,472,537
Total Savings		\$271,835	\$710,753
Per bed Savings		\$4,384	\$11,464

[Note: Because JRA does not operate any of these units above rated capacity, there is no need to calculate a second set of cost figures based on a higher capacity level.]

As can be seen in the exhibit, this scenario would result in substantial operational savings--just over \$710,000 on an annual equivalent basis. It would require closing one of Green Hill’s two existing maximum security units, and moving it into the Maple Lane facility. Although this would leave Green Hill with reduced maximum security capacity, the two facilities are located only about 15 miles apart. Presumably if the need arose, Green Hill would be able to transfer its maximum security residents to Maple Lane.

## CONCLUDING DISCUSSION

Our analysis shows that JRA has been on the right track in terms of its development of the housing prototype unit. These new units offer significant cost savings in comparison to many of the existing housing unit types at JRA facilities. Our analysis further shows that there are a number of instances where cost savings would be maximized by the earliest possible replacement of existing housing units with prototype units.

---

**Much potential for cost savings**

---

<sup>6</sup> Cost figures are annual equivalent amounts, expressed in current dollars, and calculated over a 50-year period.

Similarly, our analysis shows that significant cost savings could be achieved by consolidating Indian Ridge and Mission Creek at Green Hill. Obviously, this assumes that the latest population forecast is accurate, and that additional units will not be needed at Green Hill *just* to respond to increased system capacity. Even if that were to turn out to be the case, however, either because of the forecast being inaccurate or because of changes to current sentencing laws, it is likely that cost-effective consolidation could still be achieved by expanding Maple Lane.

---

Total savings of about -\$3.5 million

The total maximum amount of annual equivalent cost savings that are identified in the different scenarios presented in this chapter is just less than \$3.5 million. In our opinion, the fact that such savings are there to be identified points to the need for JRA to develop an on-going master planning process that incorporates the types of analytic tools that we have utilized in this study. We have provided copies of our capital model to JRA, along with instructions as to its use.

Having this type of on-going process will avoid the pitfalls associated with a “one-shot” type of master planning project such as the 1995 master plan. It would also enable JRA to respond to changing population forecasts in the most cost-effective manner possible.

## RECOMMENDATIONS

### *Recommendation 2*

*The Juvenile Rehabilitation Administration should amend its capital plan to provide for the earliest possible replacement of the housing units identified in this report as being non-cost-effective. If the Juvenile Rehabilitation Administration determines that certain units should not be replaced for programmatic reasons, it should specify what those reasons are and what steps it will take to improve their cost-effectiveness.*

### *Recommendation 3*

*The Juvenile Rehabilitation Administration should further amend its capital plan to provide for the consolidation of Indian Ridge and Mission Creek at:*

- a) Green Hill School, assuming forecasted population levels do not increase substantially beyond currently forecast levels; or*
- b) Maple Lane, in the event that forecasted population levels increase beyond currently forecast levels to the point where consolidation at Green Hill would not be practicable.*

***Recommendation 4***

***The Juvenile Rehabilitation Administration should develop an ongoing master planning process that incorporates the type of analytic tools utilized in this study.***

***Recommendation 5***

***In reviewing any Juvenile Rehabilitation Administration capital requests for new or replacement housing units, the legislature should be provided analysis on whether such projects meet benchmarks of capital and operating efficiency.***

---

# FURTHER EFFICIENCIES

## Chapter Five

---

**T**his chapter discusses two areas that JRA can pursue in order to generate additional savings. The first is to lower the cost of capital projects. If capital costs for housing units can be lowered, the scenarios described in this report for replacement of existing housing units can become even more economically attractive. The second area is to develop and use benchmarks (efficiency targets) for staffing housing units and support functions. This can be done to gain efficiencies without the use of capital expenditures.

### ANALYSIS OF NON-TRADITIONAL CONSTRUCTION

As part of its work on JRA's master plan, the consulting firm of NBBJ reviewed an alternative to the traditional method of constructing new facilities. The purpose of this review was to examine whether there was a more cost-efficient approach to providing new JRA beds.

The traditional method is to build structures on site, more or less from scratch. The alternative method reviewed by NBBJ is called "modular construction." In the context of correctional construction, modular construction can mean any of several non-traditional materials and methods of construction, ranging from fabric structures to pre-cast concrete cells.

NBBJ's review concluded that modular construction would be more costly over time. We found, however, that this conclusion was based on a technically flawed analytical model (which we subsequently

---

## Summary

---

Previous study was flawed

verified with the consulting firm),<sup>1</sup> and, even more importantly, on questionable assumptions. Most notably, the firm combined costs for pre-cast concrete structures (which use materials similar to traditional construction) with an assumed life span and maintenance requirements appropriate for buildings using much less durable construction materials. The impact of this was to significantly overstate the lifetime cost of using pre-cast concrete modulars in place of traditional construction.

## Results of JLARC Modular Analysis

Using a life-cycle cost model, similar to that described elsewhere in this report, we compared the estimated cost of building pre-cast concrete housing units to the budgeted cost of JRA's new prototype units being build at Green Hill. In making this comparison, we used the highest cost reported from among our sources for modular construction,<sup>2</sup> and we used JRA budgeted costs for its 64-Bed Prototype Housing Unit.

The results of this analysis indicate that the pre-cast alternative may result in savings in the range of 26 percent over traditional construction.<sup>3</sup> However, until this state actually solicits and receives bids for this kind of construction, it is difficult to say with any degree of certainty what kind of savings might actually be achieved.<sup>4</sup>

Additionally, it should be noted that because alternative construction methods have not been widely used in Washington, the state's overall bidding and pre-design processes have been oriented towards

---

**Modular  
construction  
could save  
26%**

---

<sup>1</sup>JLARC audit workpapers: NBBJ Analysis for JRA, 8/26/96; and NBBJ Life-Cycle Cost Analysis of Traditional v. Modular Construction, 10/15/96.

<sup>2</sup>We reviewed NBBJ estimates, actual cost experience in Pennsylvania with two projects, and a study done for California by the Kitchell Corporation. We made adjustments for regional cost differences, when needed. The cost figures from each of these sources assume that prevailing wages are paid and that there is no use of inmate labor.

<sup>3</sup>The break-even point in this analysis was 24 years. That is, if the pre-cast units would last at least 24 years, they would be preferable to traditionally constructed units. The break-even point of 24 years is about half of the expected useful life.

<sup>4</sup>Pennsylvania, which has experienced costs for pre-cast units in the \$120-\$122 range (1996 dollars), has recently had to go out to bid a second time because bids for both pre-cast concrete and modular metal cells came in at substantially higher amounts.

traditional construction techniques. As a result, companies that manufacture modular structures could be effectively excluded from competing on projects unless these processes were restructured to specifically permit this type of construction technology.

The results of our review should not be interpreted as suggesting that any particular construction method should be used in building new housing units. On the contrary, what this analysis suggests is that serious consideration and careful analysis of alternative construction methods, not just one method, should be incorporated into the capital planning process.

## STAFFING EFFICIENCIES

Previous discussion in this report addresses opportunities for efficiencies through increasing the size of individual housing units or by increasing the size of entire institutions. Savings are generated because the cost of capital projects, in these scenarios, is less than operational savings that will result over the lifetime of the building or institution. While the capital projects identified in the previous chapter will provide large and easily identifiable savings, there are additional ways for JRA to achieve efficiencies in the system. One method is to develop and use benchmarks (efficiency targets) for determining how housing units and support functions are staffed.

### Staffing Patterns

The existing system of facilities and staffing patterns in JRA are due more to history and to decentralized control than to systematic planning. Staffing patterns, and the establishment of residential treatment beds which require enriched staffing, have generally been initiated by individual institutions. Staffing new capacity has generally been guided by how many FTEs have traditionally been used in 16-bed cottages at Echo Glen. In reality, units of the same size and offering the same core or special treatment program differ somewhat in their level of staffing since there is no required standardization.

There has been an attempt in recent years for headquarters to “level” or equalize resources between institutions, although the general result has been to maintain operations or establish new operations within the traditional level of resources.

---

Further  
study  
warranted

---

Existing  
staffing  
based on  
historical  
patterns

## The Staffing Model

The first staffing model for JRA was developed initially in order to estimate the staffing level which will be requested for the new 64-bed units at Green Hill in the 1997-99 Biennium. In doing so, the new staffing model outlines the staffing needs at various unit sizes within JRA and identifies areas where staffing efficiencies can be realized from larger sized units.

**New staffing model a good start . .**

Development of this staffing model for new capacity is a positive step for JRA. The model clearly establishes the efficiency gains JRA plans to take with the new 64-bed units. (Supporting data also provides some clarity on how unit staff spend their time.) Although the model outlines staffing levels for 16-bed, 24-bed, and 48-bed units, it is not yet determined how the department intends to use the model beyond staffing the 64-bed units. We see the model as an opportunity for the department to generate future efficiencies.

**. . . but refinements could increase savings**

When compared to current staffing levels, the model’s staffing for different size housing units is sometimes less costly than units of the same size, and sometimes it is more costly. Those housing units which are operating at a lower cost per bed than the model are of particular interest. These are internal benchmarks that could be a starting point for JRA to develop a staffing model that generates further efficiencies. A preliminary estimate of applying JRA’s internal staffing benchmarks—or its new model, whichever is least costly for the particular size unit—suggests there could be a combined savings of approximately \$284,000 per year.

## Classification Mix

The match of staff classification levels and responsibilities in JRA institutions is another area where there is room for refinement; specifically for counselors and counselor assistants. The issue of the match between responsibilities and classification also raises the question of how efficiently counselors are used in a system where they have duties that include a wide variety of functions that range from drug counseling to checking out hygiene supplies. Some of these responsibilities can be effectively handled by assistants instead of full counselors.

One of the reasons the staffing model shows efficiencies over the current system is that the classification level of FTEs in the model is generally less costly than in actual practice. For example, because counselors receive a higher salary than counselor assistants, it would be more expensive to staff with all counselors rather than a mix of the two classification levels.

While the new staffing model generally shows a less expensive mix of classifications than actual patterns, our review indicates there is room to improve in this area. The staffing model includes slightly more counselor FTEs than JRA’s analysis for its staffing model indicates are necessary to provide the functions of counseling and general intervention duties.<sup>5</sup> If the job of counselor is defined in very broad terms, JRA’s analysis would suggest that some minor changes in the model’s mix of classifications are appropriate. We estimate this could reduce costs at each 64-bed facility by \$10,000/year. However, there could be a more sizable impact if the responsibilities of counselors were less broadly defined, therefore leaving more tasks to counselor assistants.

### Support Services Model

JRA does not have a staffing model for institutional support services (everything except housing units). Our review of institutional support services identified some variations in cost that were unexplained by differences in facility size, purpose, or design. Nor were the differences obviously attributable to population characteristics.

While housing unit staff represent the largest share of institutional labor, support staff still comprise 36 percent of total operating costs. Establishing a staffing model based on internal benchmarks for staffing support services has a potential for reducing and controlling costs.

## CONCLUSION

There are opportunities for JRA to pursue further efficiencies in both the capital and operating areas. Both areas, however, will

---

<sup>5</sup> JRA conducted a “time-motion” study of how various staff spend their time in order to determine amount of staff needed for the new 64-bed units.

---

Refining the "mix" of positions could save money

---

Staffing model needed for support positions

require ongoing analysis and review to first identify the most efficient benchmark, or direction, and then to continue to review previous targets for ways to improve.

It should be noted that if JRA can lower its capital costs by using alternative construction methods, all of the scenarios presented in this report, which suggest the economic advantage of replacing older housing units, would become even more economically attractive. To the extent that current staffing practices can be made more efficient in existing buildings, this will minimize costs until the structures can be improved. However to achieve sizable savings, current facilities will need to be rebuilt. Improving the staffing models will save money but this can not match the savings that would be possible under the scenarios discussed in the previous chapter for rebuilding and consolidating facilities.

## RECOMMENDATIONS

### *Recommendation 6*

*The Juvenile Rehabilitation Administration should incorporate a thorough and ongoing review of alternative construction methods into its capital planning processes. If these methods show the potential for reducing life-cycle capital costs, the bidding and predesign process for projects should be structured so as to allow for competition from these methods.*

### *Recommendation 7*

*The Juvenile Rehabilitation Administration should further develop and apply a staffing model for its housing units and institutional support services that rely on cost-effective benchmarks.*

---

---

# SCOPE AND OBJECTIVES

## Appendix 1

---

### *SCOPE*

This study will review the capital and operating costs, both current and planned, of the major residential facilities operated by the Department of Social and Health Services' (DSHS') Juvenile Rehabilitation Administration (JRA). Emphasis will be placed on identifying cost drivers and determining whether efficiencies and/or cost savings can be realized.

### *OBJECTIVES*

1. Determine whether JRA's capital planning process results in cost-effective practices and projects.
2. Assess the relative efficiency of current and planned facilities and determine whether they are being used in the most cost-effective manner.
3. Assess the costs and benefits of replacing existing facilities with new facilities.\*
4. Review staffing practices and identify staffing level drivers at each institution, including the impact of facility design, security requirements, and programming considerations.\*
5. Assess whether JRA staffs its facilities, and otherwise provides services in an efficient and cost-effective manner.
6. Develop a methodology for estimating the costs or savings associated with changes to institutional populations, including provisions related to the appropriate use of average and marginal costs.\*

\*Consistent with legislative direction per ESSB 6251.

---

# AGENCY RESPONSE

## Appendix 2

---

- Department of Social and Health Services
- Auditor's Comments to Agency Response
- Office of Financial Management





STATE OF WASHINGTON  
DEPARTMENT OF SOCIAL AND HEALTH SERVICES  
*Olympia WA 98504-5000*

RECEIVED  
DEC 31 1996  
JLARC

December 30, 1996

Cheryle A. Broom, Legislative Auditor  
Joint Legislative Audit and Review Committee  
506 16<sup>th</sup> Avenue S.E.  
Olympia, Washington 98501-2323

Dear Ms. Broom:

This letter is the Department of Social and Health Services (DSHS) formal response to the recommendations included in the Joint Legislative Audit and Review Committee (JLARC) Preliminary Report on Juvenile Rehabilitation Capacity Planning.

The Juvenile Rehabilitation Administration (JRA) appreciates the hard work, thoroughness, and expertise of the JLARC staff. Constructive and positive working relationships were developed during the audit, and JRA staff plans to continue a working partnership with the JLARC auditors; especially in regard to the analytic tools for Life Cycle Cost Analysis.

Additionally, I want to thank committee members for their continuing interest and support of DSHS/JRA issues and programs.

As you review our response below, I believe it is important to keep in mind that organizationally, JRA provides a broad weave of programs for youthful offenders in a variety of facilities acquired over time to meet rapidly changing offender demographics and population forecasts. Accordingly, some of the recommendations that are based on common standards applied uniformly fit well in some instances, and not so well in others. For example, forestry programs for youth in small relatively inefficient Department of Natural Resources-based (DNR) work camps provide a very important tool for juveniles needing structured employment work skills including respect for authority, teamwork, and individual accountability in a "real" workday environment. In addition, the work performed results in tangible returns to the taxpayer. In the bottom line, it becomes a question of positive rehabilitative programming versus a relative increase in cost per day.

NOTE: A more detailed agency response is available by directly requesting one through the JLARC office.



## **Auditor's Comments in Response to Agency Remarks**

### **Recommendation 1: Eliminate subsidy for Naselle staff housing.**

We acknowledge JRA's intention not to re-build the staff housing units once they have reached the end of their useful life. We note again, however, that JRA has identified over \$700,000 in repair work that needs to be done within the next ten years. It has also indicated that these units are expected to reach the end of their useful lives in the year 2009. The legislature should be aware of these circumstances prior to approving the expenditure of any funds for these units.

We recognize JRA's point that the rents for these units will go to the General Fund and can not be directly retained for maintenance at Naselle. However, the objective of eliminating General Fund subsidy of housing for JRA employees will still be met as long as rents cover the cost of upkeep because the result will be revenue neutral.

### **Recommendation 2: JRA should amend its capital plan to provide for replacement of housing units that are not cost-effective.**

Many of JRA's comments do not appear to directly address the recommendation. We also question the comment that "[s]entencing reforms proposed in the just released Governor's 1997-1999 Budget also affect this recommendation." The housing units we identified as being non-cost-effective will remain that way irrespective of any changes to the sentencing laws.

### **Recommendation 3: JRA to amend capital plan to provide for consolidation of Indian Ridge and Mission Creek.**

JRA states that it does not concur with this recommendation for two reasons: 1) it believes that the Governor's sentencing proposals will increase the number of beds needed, thereby requiring all facilities to remain open; and 2) it believes that the DNR program is "an important and effective rehabilitation tool...which cannot be replicated at Green Hill or Maple Lane."

Our response to the first point is that even *if* the Governor's initiatives were enacted in the 1997 session, Indian Ridge and Mission Creek should still be consolidated at larger institutions. Changes in sentencing laws could potentially impact the *timing* of closing existing facilities, but consolidation of facilities should not be incompatible with building new capacity.

Our response to the second point is that this is a policy decision the legislature needs to weigh. These smaller forestry camps provide DNR jobs for approximately 70 juveniles at a cost to the state of \$1,260,000 more per year (or \$18,000 per participant) than if they were consolidated into a larger institution. (This is after accounting for the capital costs of moving and housing the camp populations.)

As for the value of the programs housed at Mission Creek and Indian Ridge, we are not aware of any evaluation or other documentation that confirms that the camp programs *are* more effective than other JRA programs. Furthermore, JRA staff told us previously that it would not be particularly problematic if they were unable to continue their forestry work programs at Indian Ridge and Mission Creek, since they would likely be able to develop some other type of work training program to replace it. As for continuing the DNR work experience, our understanding is that the Department of Natural Resources has not ruled out the possibility of operating a forestry work program out of either Green Hill or Maple Lane.

**Recommendation 4: No auditor's comments.**

**Recommendation 5: No auditor's comments.**

**Recommendation 6: JRA should review alternative construction methods.**

JRA's response suggests that JRA does not have a role or responsibility in evaluating alternative construction methodologies that might lead to lower capital costs. The response further states that this is the role and responsibility of OFM, and that OFM always analyzes alternatives well in advance of the pre-design process.

We disagree. JRA has a necessary and major role to play in evaluating alternatives, and OFM does not typically analyze specific alternative construction methodologies, although it certainly has a role in reviewing what agencies propose.

A model that JRA can follow is offered by the Department of Corrections. This agency has taken the lead in evaluating alternative construction methodologies for its facilities, such as the 400 bed minimum security prisons that are constructed of wood. DOC also conducts its own life cycle cost analyses.

Since JRA must take the lead in evaluating its programmatic needs, it should also take the lead in evaluating the kinds of facilities and construction methodologies that can meet those needs in the most cost-effective manner.

**Recommendation 7: No auditor's comments.**



RECEIVED

JAN 10 1997

JLARI

STATE OF WASHINGTON

OFFICE OF FINANCIAL MANAGEMENT

Insurance Building, PO Box 41113 • Olympia, Washington 98504-1113 • (360) 577-5459

January 9, 1997

Cheryle A. Broom, Legislative Auditor  
Joint Legislative Audit and Review Committee  
Post Office Box 40910  
Olympia, Washington 98501-2223

Dear Ms. Broom:

Thank you for providing the Office of Financial Management (OFM) the opportunity to review the preliminary report on **Juvenile Rehabilitation Capacity Planning**.

The Department of Social and Health Services is responding to the recommendations in the report that relate to the operation of the **Juvenile Rehabilitation Administration**.

This letter is responding to Recommendation 6 which addresses consideration of alternative construction approaches in the development of juvenile justice facilities. OFM has instituted a comprehensive predesign process for state capital projects which provides a format for the consideration of alternative construction methods. The predesign process calls for defining the programs to be delivered in the proposed facility and the analysis of construction alternatives to meet this program need. Included in the review process is an examination of costs, schedules, and alternative budgets using the life cycle cost analytical approach. The predesign process is completed prior to the design stage so the opportunity to employ alternative construction methods is available.

OFM expects that future proposals for major expansions in the juvenile rehabilitation system will undergo a thorough predesign process that includes the consideration of alternative construction methods. If you should have any questions on the current capital process, please contact Tom Henderson of OFM at 902-0542.

Sincerely,

A handwritten signature in cursive script that reads "Gary S. Robinson".

Gary S. Robinson  
Acting Director

---

---

# SENSITIVITY OF DISCOUNT RATES

## Appendix 3

---

The estimated savings figures portrayed in Chapter 4 were calculated using a real (after inflation) discount rate of 10 percent. A discount rate is used to translate future values into present values. It recognizes the time value of money. For example, it recognizes that a dollar today, which can be invested for gain, has potential greater value than a dollar received ten years into the future.

The use of a 10 percent real discount rate is consistent with the rate recommended by the federal Office of Management and Budget<sup>1</sup> for comparisons in which there is significant risk associated with assumptions of savings accrued many years into the future. This can also be considered a conservative rate in that it places a greater burden on proposals that entail spending now in order to save more money over the long run.

Since the choice of a discount rate can have a significant impact on the outcome of an analysis, we conducted a sensitivity analysis using a lower real discount rate of 5 percent. This is the minimum discount rate that JLARC has found to be justified in its economic analyses.<sup>2</sup> It approximates the unsubsidized rate of return that state taxpayers (i.e., those who pay state bonds) could expect on a low risk, long-term investment. As is shown in the exhibit on the following page, use of the lower discount rate would suggest higher estimated savings in all instances.

**Appendix 3  
(Continued)**

	Real Discount Rate 10%	Real Discount Rate 5%
	<b>Replace Now Savings/Bed</b>	<b>Replace Now Savings/Bed</b>
<b>Maple Lane School (Exhibit 10, p. 24)</b> Replace Evergreen Pine, Sequoia and Spruce Cottages	\$ 6,444	\$ 6,621
<b>Maple Lane School (Exhibit 11, p. 26)</b> Replace three 24-bed cottages with one prototype	\$ 1,085	\$ 1,783
<b>Echo Glen (Exhibit 11, p. 26)</b> Replace 8 16-bed cottages with two prototypes	\$ 5,233	\$ 6,308
<b>Echo Glen (Exhibit 11, p. 26)</b> Replace 12 16-bed cottages with three prototypes	\$ 5,238	\$ 6,313
<b>Maple Lane School (Exhibit 14, p.29)</b> Combination of replacement and alternative use efficiencies	\$ 11,464	\$ 11,681
	<b>Consolidation Savings/Bed</b>	<b>Consolidation Savings/Bed</b>
<b>Indian Ridge (Exhibit 12, p.27)</b> Close facility and consolidate at Green Hill	\$ 8,371	\$ 8,639
<b>Mission Creek (Exhibit 13, p.28)</b> Close facility and consolidate at Green Hill	\$ 8,192	\$ 8,816
<b>Indian Ridge and Mission Creek (Exhibit 13, p.28)</b> Close both facilities and consolidate at Green Hill	\$ 9,301	\$ 9,741

---

# CASH FLOW ANALYSIS

Appendix 4

---

**Appendix 4**  
**CASH FLOW ANALYSIS**

Maple Lane School  
Evergreen, Pine, Sequoia and Spruce Cottages

	1996 (Yr 0)	1997 (Yr 1)	1998 (Yr 2)	1999 (Yr 3)	2000 (Yr 4)	2001 (Yr 5)	2002 (Yr 6)	2003 (Yr 7)	2004 (Yr 8)	2005 (Yr 9)	2006 (Yr 10)
<b>Replace Housing Units Now with Prototype Units (A)</b>											
Debt Service	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042
Major Repairs and Replacement	\$ 22,041	\$ 22,784	\$ 23,551	\$ 24,345	\$ 25,165	\$ 26,014	\$ 26,890	\$ 27,796	\$ 28,733	\$ 29,701	\$ 30,702
Operations and Maintenance	\$ 1,251,746	\$ 1,293,930	\$ 1,337,535	\$ 1,382,610	\$ 1,429,204	\$ 1,477,368	\$ 1,527,156	\$ 1,578,621	\$ 1,631,820	\$ 1,686,813	\$ 1,743,658
Residual Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 1,548,829	\$ 1,591,755	\$ 1,636,129	\$ 1,681,997	\$ 1,729,412	\$ 1,778,424	\$ 1,829,088	\$ 1,881,459	\$ 1,935,595	\$ 1,991,556	\$ 2,049,403

**Replace Housing Units with Similar Structures at the End of Their Useful Life (B)**

Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973
Major Repairs and Replacement	\$ 24,045	\$ 24,855	\$ 25,693	\$ 26,568	\$ 27,453	\$ 28,379	\$ 29,348	\$ 30,361	\$ 31,418	\$ 32,518	\$ 33,661
Operations and Maintenance	\$ 1,738,899	\$ 1,797,499	\$ 1,858,075	\$ 1,920,692	\$ 1,985,420	\$ 2,052,328	\$ 2,121,492	\$ 2,192,986	\$ 2,266,890	\$ 2,343,284	\$ 2,422,253
Residual Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 1,762,943	\$ 1,822,354	\$ 1,883,768	\$ 1,947,251	\$ 2,012,873	\$ 2,295,680	\$ 2,370,013	\$ 2,442,638	\$ 2,517,710	\$ 2,595,312	\$ 2,675,530
<b>Cash Flow Difference (B-A)</b>	\$ 214,115	\$ 230,599	\$ 247,639	\$ 265,254	\$ 283,462	\$ 517,256	\$ 540,925	\$ 561,179	\$ 582,115	\$ 603,756	\$ 626,127

Debt Service	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042	\$ 275,042
Major Repairs and Replacement	\$ 31,737	\$ 32,807	\$ 33,912	\$ 35,055	\$ 36,236	\$ 37,457	\$ 38,720	\$ 40,025	\$ 41,373	\$ 42,768	\$ 44,209
Operations and Maintenance	\$ 1,802,420	\$ 1,863,161	\$ 1,925,950	\$ 1,990,854	\$ 2,057,946	\$ 2,127,299	\$ 2,198,989	\$ 2,273,095	\$ 2,349,698	\$ 2,428,883	\$ 2,510,736
Residual Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 2,109,199	\$ 2,171,010	\$ 2,234,904	\$ 2,300,951	\$ 2,369,224	\$ 2,439,798	\$ 2,512,750	\$ 2,588,161	\$ 2,666,113	\$ 2,746,692	\$ 2,829,987
Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973
Major Repairs and Replacement	\$ 24,045	\$ 24,855	\$ 25,693	\$ 26,568	\$ 27,453	\$ 28,379	\$ 29,348	\$ 30,361	\$ 31,418	\$ 32,518	\$ 33,661
Operations and Maintenance	\$ 1,738,899	\$ 1,797,499	\$ 1,858,075	\$ 1,920,692	\$ 1,985,420	\$ 2,052,328	\$ 2,121,492	\$ 2,192,986	\$ 2,266,890	\$ 2,343,284	\$ 2,422,253
Residual Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 1,762,943	\$ 1,822,354	\$ 1,883,768	\$ 1,947,251	\$ 2,012,873	\$ 2,295,680	\$ 2,370,013	\$ 2,442,638	\$ 2,517,710	\$ 2,595,312	\$ 2,675,530
<b>Cash Flow Difference (B-A)</b>	\$ 214,115	\$ 230,599	\$ 247,639	\$ 265,254	\$ 283,462	\$ 517,256	\$ 540,925	\$ 561,179	\$ 582,115	\$ 603,756	\$ 626,127

Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973	\$ 214,973
Major Repairs and Replacement	\$ 24,045	\$ 24,855	\$ 25,693	\$ 26,568	\$ 27,453	\$ 28,379	\$ 29,348	\$ 30,361	\$ 31,418	\$ 32,518	\$ 33,661
Operations and Maintenance	\$ 1,738,899	\$ 1,797,499	\$ 1,858,075	\$ 1,920,692	\$ 1,985,420	\$ 2,052,328	\$ 2,121,492	\$ 2,192,986	\$ 2,266,890	\$ 2,343,284	\$ 2,422,253
Residual Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 1,762,943	\$ 1,822,354	\$ 1,883,768	\$ 1,947,251	\$ 2,012,873	\$ 2,295,680	\$ 2,370,013	\$ 2,442,638	\$ 2,517,710	\$ 2,595,312	\$ 2,675,530
<b>Cash Flow Difference (B-A)</b>	\$ 214,115	\$ 230,599	\$ 247,639	\$ 265,254	\$ 283,462	\$ 517,256	\$ 540,925	\$ 561,179	\$ 582,115	\$ 603,756	\$ 626,127

**Appendix 4**  
**CASH FLOW ANALYSIS**  
(Continued)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
	(Yr-22)	(Yr-23)	(Yr-24)	(Yr-25)	(Yr-26)	(Yr-27)	(Yr-28)	(Yr-29)	(Yr-30)	(Yr-31)	(Yr-32)	(Yr-33)	(Yr-34)	(Yr-35)
\$	275,042	275,042	275,042	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
\$	45,689	47,239	48,831	50,476	52,178	53,936	55,754	57,632	59,575	61,582	63,658	65,803	68,021	70,313
\$	2,595,348	2,682,811	2,773,222	2,866,680	2,963,287	3,063,149	3,166,378	3,273,084	3,383,387	3,497,408	3,615,270	3,737,105	3,863,045	3,993,230
\$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$	2,916,089	3,005,092	3,097,095	2,917,156	3,015,464	3,117,085	3,222,131	3,330,177	3,442,962	3,558,990	3,678,928	3,802,908	3,931,066	4,063,543
\$	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737	436,737
\$	62,317	64,417	66,588	68,832	71,152	73,550	76,028	78,590	81,239	83,977	86,807	89,732	92,756	95,882
\$	3,605,401	3,726,903	3,852,500	3,982,329	4,116,534	4,255,261	4,398,663	4,546,898	4,700,129	4,858,523	5,022,255	5,191,505	5,366,459	5,547,309
\$	4,104,455	4,228,057	4,355,825	4,487,898	4,624,422	4,765,547	4,911,428	5,062,225	5,218,132	5,374,264	5,530,626	5,688,301	5,846,299	6,004,626
\$	1,188,367	1,222,965	1,258,730	1,570,742	1,608,958	1,648,462	1,689,297	1,731,508	1,560,169	1,605,274	1,651,898	1,700,094	1,749,913	1,801,412
\$	72,682	75,132	77,664	80,281	82,986	85,783	88,674	91,662	94,751	97,944	101,245	104,657	108,184	111,830
\$	4,127,802	4,266,909	4,410,703	4,559,344	4,712,994	4,871,822	5,036,002	5,205,716	5,381,148	5,562,493	5,749,949	5,943,722	6,144,026	6,351,079
\$	4,200,484	4,342,040	4,488,367	4,639,625	4,795,980	4,957,605	5,124,676	5,297,378	5,475,900	5,660,437	5,851,194	6,048,379	6,252,210	6,462,909
\$	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764	221,764
\$	99,113	102,453	105,906	109,475	113,164	116,978	120,920	124,995	129,207	133,561	138,062	142,715	147,525	152,496
\$	5,734,253	5,927,497	6,127,254	6,333,742	6,547,189	6,767,830	6,995,906	7,231,668	7,475,375	7,727,295	7,987,705	8,256,890	8,535,148	8,822,782
\$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$	6,055,130	6,251,714	6,454,924	6,664,981	6,866,054	7,068,807	7,273,825	7,481,662	7,691,952	7,904,356	8,118,767	8,334,906	8,552,672	8,771,995
\$	1,854,646	1,909,674	1,966,557	2,025,356	1,864,373	1,927,202	1,992,149	2,059,285	2,128,682	2,200,419	2,274,573	2,351,226	2,430,463	2,511,914