

# Budget and Cost Analysis for the Proposed Rappahannock-Shenandoah-Warren Regional Jail

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I would like to thank Superintendent Conover, Captain Sasser and Ms. Wedekind for their assistance.

## Abstract

Rappahannock, Warren, and Shenandoah counties are rural localities in the northwestern part of Virginia. They have begun work on a regional jail to house criminal defendants and misdemeanor convicts. Each county currently has a county jail, all overcrowded and aging, and the small size of each precludes most rehabilitative programs for inmates. Many other rural counties, including many around these three, have partnered to create regional jail authorities to recognize economies of scale. Rappahannock, Warren, and Shenandoah have begun to do the same.

This budget and cost analysis finds that at 100% capacity in the FY 2015 year, the RSW Regional Jail can operate at an annual cost of \$110.86 per inmate-day; at 120% capacity, operating costs fall to \$102.79. These costs are considerably higher than what the three localities currently pay, and the regional jail may prove more expensive for the counties, even considering state aid. The jail will have excess capacity, and Northern Virginia suburbs will pay to unload their crowded jails, but the rural budgets may still feel significant strain compared to the status quo. However, the regional jail will be able to offer superior inmate programs, including GED classes, language classes, work release to local businesses, and gardening. Quantifying these benefits' value is difficult, so I cannot conclusively endorse the regional jail. Renovating and expanding the county jails may provide a better value and less risk.

The \$68 million jail would be financed by a mix of state bonds and bonds issued by the regional jail authority. However, it is not clear whether state reimbursement would occur quickly enough to prevent the regional authority from having to issue bonds for the full price of the jail; if the state could pay promptly, the three counties would save some \$13 million in interest over 30 years.

Operating jails involves a broad array of fixed and variable costs. Identifying these, gauging their behavior with respect to inmate load, and forecasting inflation over time is difficult when peer facilities use the simplest kind of line-item budget presentations. Flexible and program budgets should be created by existing regional jails to improve transparency and decision making.

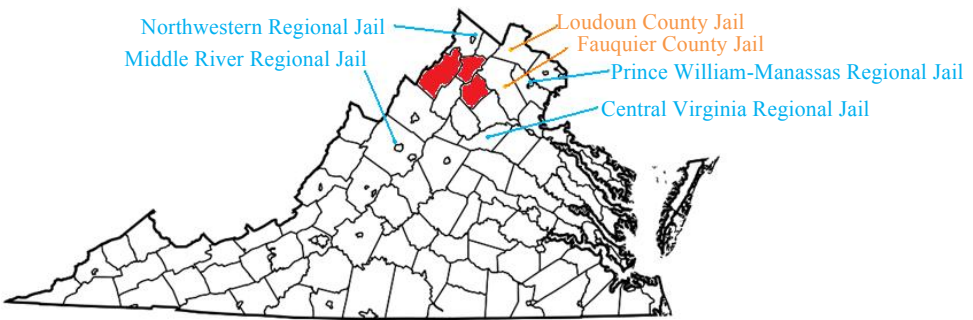
## Background

Virginia currently has 21 regional jails. These facilities provide smaller localities with economies of scale in detention and care of inmates. While the state Department of Corrections operates 37 correctional and work centers for convicted felons, jails house those convicted of lesser offenses and those awaiting trial for whom bail has not been posted. Throughout most of Virginia's history, each city and county maintained its own jail. These brick buildings downtown did not age well, conditions deteriorated, and paradigms of simple incarceration and efficiency partially gave way to new emphases on rehabilitation and ethical care. For many rural localities, regional jails concentrate expertise, reduce overhead, and enable compliance with current legal, technological, and ethical standards.<sup>1</sup>

The map below shows the service area of the proposed RSW Regional Jail and its nearby peers.

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**Figure 1: Map of RSW Regional Jail Service Area and Nearby Peer Facilities**



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At present, Shenandoah, Warren, and Rappahannock Counties each maintain a county jail in the county seat. While all three counties are rural and are located beyond the Washington, D.C. metro area, their populations are growing rapidly. Their county jail facilities represent the previous century's architecture, ethics, and demographics. The excerpt below, from the Corrections Department report that approved the RSW Regional Jail project, details existing conditions:

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<sup>1</sup> Robyn de Socio, *FY 2009 Jail Cost Report*, iv.

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*The Rappahannock County Jail, located in the Town of Washington, was built in the late 1830's, and renovated/expanded in 1991; a two story historic brick structure with a basement, and is located adjacent to the Rappahannock County Court complex. The facility has an operating capacity of 7 inmates; the ADP [average daily population] was 14, during the first six months of 2006, and the facility was operating at an average 195% of capacity in 2006.*

*Shenandoah County Jail is located on South Main Street in Woodstock, Virginia adjacent to the Circuit Court Building; a two story brick structure with a basement, the jail design is the old style "linear indirect supervision" model characterized by small cells placed in a back to back arrangement of rows; opened in 1969 with an expansion in 1991, the facility has an operating capacity of 55; an ADP of 84 was reported during the first six months of 2006, and the jail was operating at 153% of capacity in 2006.*

*Warren County Jail, located in the Town of Front Royal, was opened in 1950, expanded in 1989, and a work release center (separate from the main jail) opened in 2001; the jail has an operating capacity of 79, and the ADP was 157 in the first six months of 2006; the jail was operating at an average 199% of capacity in 2006.*

*All three facilities are in need of some major renovations and will be closed once the new facility is opened.<sup>2</sup>*

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Not only have the localities' populations increased, but the load on sheriff's offices is also changing, as globalization brings new kinds of crime to the Shenandoah Valley. The interstate highways that run through the area have in recent years become major avenues for the trafficking of drugs and weapons to urban markets along the eastern seaboard. Rural jails along these routes hold a small but significant and expensive number of prisoners for extradition or deportation. In 2005, Shenandoah and Warren Counties joined the federally-funded Northwest Regional Drug/Gang Task Force to curtail transient illicit activity, including MS-13 gang members and methamphetamine shipments.<sup>3</sup>

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<sup>2</sup> Virginia Department of Corrections. Annual Report of Board of Corrections: Approved Jail Projects, 15.

<sup>3</sup> Daniel McEathron, Shenandoah County sheriff. "Memo Re. FY 2011 Gang Task Force Funding" 1.

**Table 1: Comparing Jail Costs & Crowding (source: de Socio, FY 2009 Jail Cost Report)**

Jail Facility	Capacity	Load	% Capacity	Operating Cost per Inmate-Day	Year Built
Northwestern	556	549	99	\$82.97	2007
Rappahannock	7	23	329	\$91.64	1835, 1991
Shenandoah	55	96	175	\$51.52	1969, 1971
Warren	79	107	136	\$54.50	1950, 1989, 2001
Central Virginia	242	382	158	\$53.01	1990, 2000
Middle River	396	594	150	\$48.42	2006
Fauquier	56	114	203	\$72.45	1966
Overall	1391	1865	134	-	-

Finally, neighboring jails lack the capacity to easily absorb the extra inmates from these three counties. The table above shows FY09 capacities and loads from the state Compensation Board Report. Most facilities which might receive the excess from Shenandoah, Warren, and Rappahannock Counties are over capacity, even though three of the four are less than 10 years old.

In sum, a new regional jail facility for Rappahannock, Shenandoah, and Warren Counties has the potential to reduce detention costs for those localities while simultaneously improving conditions for inmates and relieving some of the strain on neighboring jails.

### Financing RSW Regional Jail

The proposed Rappahannock-Shenandoah-Warren Regional Jail would be financed by a mix of state and local debt obligations. The counties would prefer that the state government pay half of the construction costs. However, as currently budgeted, the greater part of construction costs fall on the localities.

On April 14, 2010, Governor McDonnell made ninety-six amendments to the biennial budget passed by the General Assembly.<sup>4</sup> Among them, inserted after the work of Delegate Clay Athey (R-Warren), was a \$32.8 million bond issue for the RSW Regional Jail. With support from local delegates, the amendment passed during the reconvened Assembly's summer session. Its summary reads:

<sup>4</sup> Voth, Sally. "McDonnell Seeking to Salvage Funds for Jail." *Northern Virginia Daily*. April 15, 2010. <http://www.nvdaily.com/news/2010/04/mcdonnell-seeking-to-salvage-funds-for-jail.php>

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*“[A]uthorizes the Virginia Public Building Authority [VPBA] to issue bonds in the amount of \$32.8 million to pay the state’s share of the construction costs of the new RSW Regional Jail. The regional jail will serve Rappahannock, Shenandoah, and Warren counties. The amendment also specifies that no state reimbursement for the project shall be made before July 1, 2012, and clarifies that any reimbursement for the new projects contained in the budget bill shall be subject to the Board of Corrections’ approval of the final expenditures.”<sup>5</sup>*

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The amendment appears to fund half of the 375-bed facility’s \$68.3 million cost. However, the amendment contains three important qualifications which increase the burden on the three counties concerned.

First, the state bonds are a reimbursement, not a payment. The RSW Regional Jail Authority (RSW RJA) issues bonds to acquire cash to pay contractors. It can then apply to the Virginia Public Building Authority for reimbursement. The time value of money creates an additional local cost proportionate to the state’s delay in reimbursement. VPBA has no incentive to act quickly.

Second, no reimbursements may be made until July, 1, 2012. This date is the beginning of the biennium following the end of the current budget – a tactic to add projects without increasing the current budget’s bottom line. If the RSW RJA breaks ground before then, it will be on its own for the first payments, including large outlays for design, land purchase, and site preparation. The time value of money again favors the state. Additionally, there are two more General Assembly sessions before July 1, 2012, and one more general election in 2011. Political maneuvering could reduce the \$32.8 million appropriation or remove it altogether, leaving the RSW RJA on the hook for a half-completed jail.

Third, the Board of Corrections reviews all payments for the state’s share. The review board is not likely to be sympathetic to poor planning, mistakes, and cost overruns. If the jail ends up costing more than \$68.3 million, the local authority is likely to bear the burden of it. The Authority would be wise to emphasize experience with the local conditions when requesting construction bids.

The table below shows how statewide bond issuers have better bond ratings and lower borrowing costs than regional authorities.

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<sup>5</sup> Department of Planning and Budget. *Governor’s 2010 Reconvened Session Executive Amendments (House Bill 30)*, 14.

<b>Table 2: Virginia Bond Ratings</b> ( <i>source: <a href="http://www.municipalbonds.com">http://www.municipalbonds.com</a></i> )			
<b>Authority</b>	<b>Moody's Rating</b>	<b>Authority</b>	<b>Moody's Rating</b>
<b>Middle River RJA</b>	<b>A1</b>	<b>Rappahannock RJA (Stafford County)</b>	<b>Aa3</b>
<b>Northwestern RJA</b>	<b>A1</b>	<b>Blue Ridge RJA (Lynchburg)</b>	<b>A2</b>
<b>State Public Buildings</b>	<b>Aa1</b>	<b>State College Buildings</b>	<b>Aa1</b>

The Rappahannock-Shenandoah-Warren Regional Jail Authority is likely to be graded like the other Shenandoah Valley RJAs: A1. A 25-year bond has a 5% coupon. The State Public Buildings Authority has a better rating and lower costs of borrowing, but it funds, at most, half of the construction costs.

The amortization tables attached in Appendix A show the costs of issuing bonds of different periods and rates. I divide a \$68.3 million construction cost into thirds and use 5-, 10-, and 25-year bonds to finance one-third each. The Northwestern Regional Jail Authority is a peer project for financing purposes, and its 5-, 10-, and 25-year bonds have rates of 3.25%, 3.75%, and 5%, respectively. Amortizing these bond issues illustrates a total interest cost of \$26.3 million. So the total construction cost, including interest, is actually \$92 million, not \$68 million.

A pessimistic assumption is that the state delays reimbursement so long that the RSW Authority must initially pay all bills and finance the entire cost as shown above. In such a case, the state's \$32.8 million reimbursement falls in value from half of the facility's cost to almost a third. If, however, state reimbursement can arrive quickly enough that the RSW Authority need only issue \$35 million in bonds, the financing picture greatly improves.

The second section of Appendix A shows amortization tables if the RSW Authority uses the same debt instruments but only finances \$33 million, the other half having arrived promptly from the state. Total interest payments are halved to \$13 million, and total local cost is \$46 million. Prompt reimbursement from the state would greatly benefit the finances of the three counties.

### General Operating Efficiency

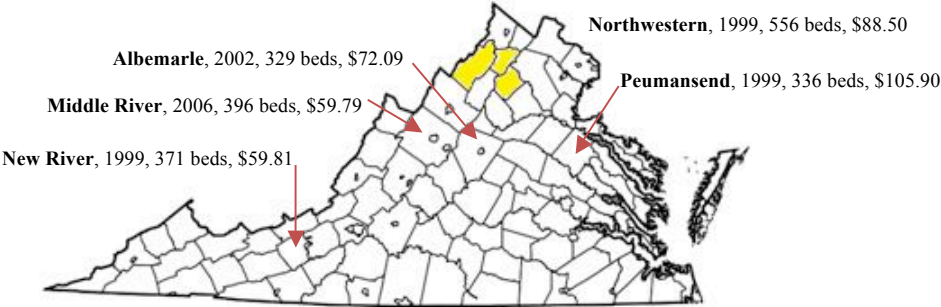
Two important determinants of operating cost for a jail are its age and its capacity. All else equal, a newer jail operates at a lower cost per inmate-day, as it benefits from new equipment in good working order. Larger jails benefit from economies of scale in most inmate services and overhead costs, and operate at a lower cost per inmate-day than smaller jails. Both of these variables are constrained, however. New jails have large up-front costs of construction



and financing. Large jails add significant transportation costs for visits and trials. So for each community there is an optimum size of jail, and a corresponding appropriate operating cost.

The final important determinant of operating cost is the local labor market. Rural jails tend to operate at a lower cost per inmate-day, as the local market supplies labor at a lower wage: this is one reason why many state and federal prisons are in rural areas. Below is a map of regional jails most closely comparable to the proposed RSW facility, with their date of completion, inmate capacity, and FY09 total cost per inmate-day.<sup>6</sup> The highlighted region is the service area for the 375-bed RSW jail.

**Figure 2: Year of Completion, Capacity, and FY09 Inmate-Day Operating Cost of Peer Facilities**



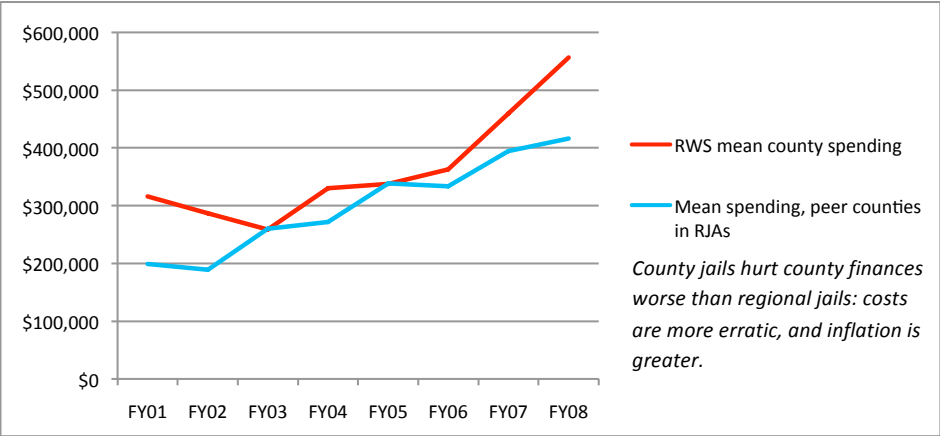
One rough way to estimate annual operating costs is to multiply the average cost per inmate-day among these five peer facilities, \$77.22, by 375 inmates at capacity, by 365 days per year. By this rough method, the annual operating costs for a hypothetical RWS Regional Jail, at 100 percent capacity, in FY09 would have been \$10,569,214.

Examining the Compensation Board reports yields some interesting trends. Looking only at the bottom line operating costs, consolidated regional jails operate consistently more efficiently than isolated county jails. In the locality spending graph, the expenditures for Rappahannock, Warren, and Shenandoah Counties, with their county jails, are compared to demographically similar counties which participate in regional jails: Clarke, Giles, and Rockbridge.<sup>7</sup> The peer counties enjoy lower costs and a lower rate of inflation for jail costs. In the unit cost graph, daily cost per inmate for the RWS county jails are compared to those for demographically similar regional jails: Albemarle, New River, Northwestern, and Peumansend. Regional jails appear to enjoy lower and less erratic operating costs.

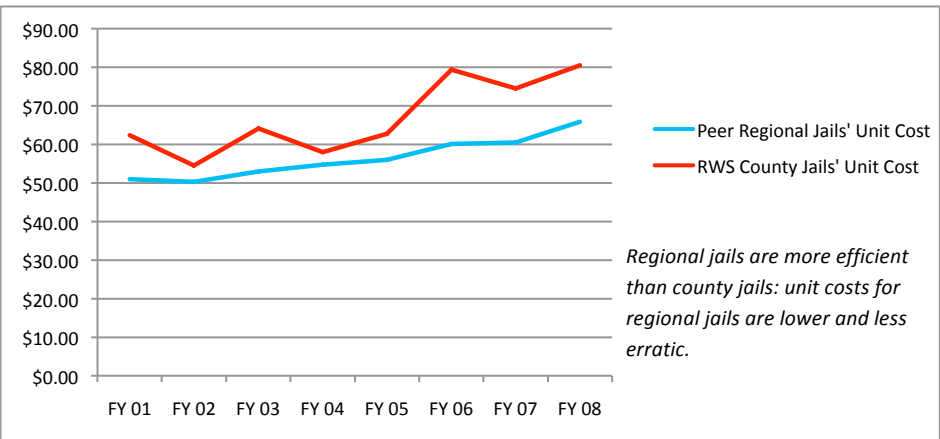
<sup>6</sup> Robyn de Socio. *FY 2009 Jail Cost Report*.  
<sup>7</sup> I chose these three counties because they have participated in a regional jail authority since at least FY 2001 and because they are similar to Rappahannock, Shenandoah, and Warren in some general demographic areas, according to 2008 Census data.



**Figure 3: Locality Spending on Jails**



**Figure 4: Cost/Inmate-Day, County vs. Regional Jails**



Since 2000, the magnitude of county jail spending consistently exceeded that of regional jails. Additionally, the trend lines for the county jails are steeper: for unit cost,  $m_{RWS}=3.3$  and  $m_{Regionals}=2.1$ . For locality spending, the inflation difference is small ( $m_{RWS}=34,172$  and  $m_{peers}=33,742$ ), but isolated counties do spend more. In 2009, the state Compensation Board found regional jails' unit operating costs to be 30 percent lower than those of county jails.<sup>8</sup> County spending on jails is also much more erratic when the county goes it alone.

This cursory analysis suggests that the three rural counties in question might stand to save money and improve effectiveness by regionally consolidating their jail activities.

### Fixed and Variable Costs

This section suggests that the lower unit cost of a regional jail occurs through a combination of reduced fixed and variable costs, mostly relating to economies of scale. The next sec-

<sup>8</sup> Robyn de Socio. FY 2009 Jail Cost Report.

tion explores the effectiveness of jail programs, which also improves in scaling up from the isolated county jail to the consolidated regional jail.

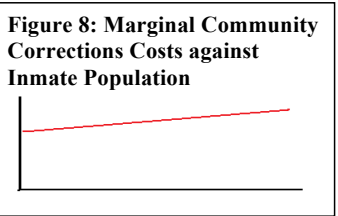
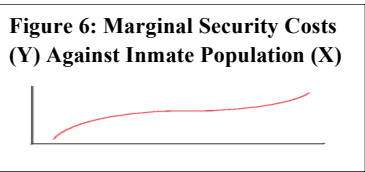
Appendix B shows the organizational chart for proposed RSW regional jail's nearest peer facility, the Northwestern regional jail in Winchester. Each box on the chart captures a different proportion of fixed and variable costs, and the variable costs for each box are more or less elastic with respect to volume. Accurately assigning costs to each box for the three county jails and standardizing by fractions of the overall load is an analytical task which the available budget data do not support. However, it is possible to consider each box in the abstract.

Security costs vary according to inmate load, theoretically on a kind of cubic function like the one shown in Figure 6. A larger facility requires less security spending per inmate due to improved technology and architecture; however, as a facility exceeds capacity and crowds, security costs may increase sharply.

Support services encounter high fixed costs of equipment, and the economies of scale may be less significant here. Equipment scales up in distinct steps. Adding a second vehicle for transport, a second commercial refrigerator, a second booking clerk or psychologist is expensive, and efficiencies only occur at the high-load area of each step. Because a jail cannot easily choose its level of output (inmates booked, fed, or driven to court), it may have little control over the efficiency or inefficiency of step-fixed costs.

Of the jail's organizational boxes, Community Corrections encounter particularly high fixed startup costs relative to variable costs. For example, setting up a Spanish-language anger management class and hiring and training the teacher is expensive, but the marginal cost of enrolling one more inmate is low. Likewise for work release: building the initial private-sector network, establishing policy, and training staff is expensive, but adding one more inmate to the work detail is not. Consolidated regional jails' pooled resources can surmount the barrier to entry and offer superior Community Corrections. Cases in point: Rappahannock County Jail has no local work release or house arrest capability, none of the three counties offer in-house pretrial services to assist with bail, and adjacent Page County funded no inmate training programs in FY 2008.<sup>9</sup>

Finally, general administrative cost patterns could resemble any of the above. Staff training cost curves look the same as inmate training cost curves; an advanced self-defense class for guards has the same cost behavior as the Spanish-language anger management class described above. Automation's fixed equipment costs behave like the step



<sup>9</sup> Robyn de Socio. *FY 2008 Jail Cost Report*.

function of the support services equipment. Upper management costs may have the same cubic behavior in response to load as security.

### **Effectiveness and Jail Programs**

Considerable savings could be achieved if the mission of jails considered only housing and securing inmates at the lowest possible cost. There would be no flu shots, landscaping expenses, or GED classes. However, effectiveness for jails also considers the physical safety and health of staff and inmates, the overall ambience of the facility, and the rehabilitation of inmates.

Some additional cost for jail programming is not for inmates, but for staff. The Northwestern Regional Jail touts the implementation of physical agility training for guards to improve their health, safety, and morale. In an e-mail, Superintendent Conover stated that the marginal programs he would implement next, if funding became available, included 16 extra “hours of training per year for each staff member in areas such as: recognizing and managing the mentally ill; interpersonal communications; suicide prevention; self-defense; etc.”<sup>10</sup>

Programs for inmates aim to reduce security risks, improve their productivity while in jail, and reduce recidivism through rehabilitation. Because jails hold inmates for less time than prisons do, the third goal is less important. Programs to reduce security risks for violent offenders also accomplish a degree of rehabilitation and include anger management and English courses for non-native speakers. More pure rehabilitative programs include GED classes and financial literacy training.

A number of programs put inmates to productive use. They work at low pay supporting the jail infrastructure, tending grounds, cleaning laundry, and mopping floors. In work release programs, low-risk inmates leave the facility under guard to work in the community, collecting trash or contracting with local firms or non-profits. To the extent that these jobs provide skills and strengthen character, they are also rehabilitative even as they generate income for the jail. The rehabilitative aspect should not be overstated, however, as the work tends to be low-skilled, and the jail’s emphasis is on cost reduction.

Finally, pretrial services and electronic home monitoring are jail-administered services which keep offenders out of jail altogether. Bail counseling and house arrest require some staff costs but stress a jail’s infrastructure much less.

Taken together, this array of programs makes a jail considerably more effective. Yet they have real costs, particularly on the front end, to establish them. Many Virginia jails, including the three county jails in this case, find their budgets too tight to offer programs beyond the bare minimum.

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<sup>10</sup> Bruce Conover. Email message to author. April 19, 2010.

## Northwestern Regional Jail Budget Analysis

In order to be transparent and helpful to citizens and staff alike, a regional jail's budget should consider contemporary public finance standards. Presentation by line item and general ledger code does not reveal fixed versus variable costs or elasticity with respect to service loads. A flexible or program budget process would make the budget more accessible to those without strong accounting backgrounds.

In creating an estimated flexible program budget for the proposed RWS Regional Jail, I looked to its closest neighbor, the Northwestern Regional Jail (NRJ) in Winchester. I chose the NRJ facility partly out of convenience – it is the jail nearest my home, and I am a “constituent” – and partly because it reflects many of the same trends which apply to the costs at the RWS jail.

NRJ's Superintendent Bruce Conover, Chief of Administrative Services Captain Kathy Sasser, and Business Manager Jeanette Wedekind were very helpful in my research, copying a budget that was not available online. However, the annual budget documents provided left much to be desired. The core of the documents were statements of cost requests for the upcoming fiscal year, grouped by general ledger code. For example, there was \$267,283 for Medical and Laboratory, and subheadings state \$5,000 for flu shots, \$100 for biohazard waste containers, \$1,000 for AED machines, and \$212,725 for general medical supplies. Within the codes, there is no consistent information about which functional units (see Appendix B's Organizational Chart) are using which items. Distinctions between specific lines are unclear. Information about unit costs does not exist frequently or consistently.

The task of organizing the budget by cost center according to the organization chart to identify the sources of variance is daunting and beyond the scope of many citizens and journalists. I attempt it in the next section, but NRJ's budget officer should present this information. Program budgeting shows costs according to their use in real life, which would be helpful information for staff and citizen alike.

Additionally, the budget should account for possible variation in load. In FY09, NRJ overran its projected \$17.6 million expenses by more than \$1 million, but the FY09 budget document presents no planning for variation in load beyond the maintenance of a 45-day Operating Reserve account. The budget document should present low, medium, and high load forecasts for the coming year, with data on how such variation would affect each budget line. For example, how much more would it cost to clear a record snowfall versus the FY10 budgeted amount of \$6,000? Or, if inmate load is 10 percent higher than expected, which expenditures increase by more than 10 percent and which increase by less? Flexible budgeting provides important information for both staff and citizens. Flex projections could be as simple as two additional columns of data, added to the right side of the current ledger presentation, to show optimistic and pessimistic projections, or the projections could complement a cost-center presentation.

Jail managers could do more to assist the public, regional bureaucrats, and their own staff

if they added cost-center and flexible budget data to their annual reports.

**Hypothetical RSW Regional Jail Flexible Budget**

Table 3 shows a projected operating budget for the completed RSW Regional Jail in the first year of its operation, FY 2015. To create this budget, I used the following procedure:

1. For staffing levels, I used the NRJ budget and annual report, along with Compensation Board reports, to estimate 138 staff for a facility of RSW’s size. At 100% capacity, a shift team of 24 officers secures 375 inmates, a ratio of 15.6:1. I arrived at a conservative estimate of annual salary and benefits of \$79,229 by examining NRJ’s budget, assuming 10% lower wage rates for a more rural area, and assuming that the facility will hire many employees who already have considerable government tenure.
2. For salaries and equipment, I analyzed the NRJ budgets line by line. Each ledger code aligned with one of seven program areas: Security, Food Service, Medical, Programs for Inmates, Transport, Administration, and Maintenance. Where a ledger code aligned with more than one program (for example, code 5408-02 Vehicle Fuels and Lubricants applies to both Transport’s police cars and Maintenance’s lawn mowers), I divided the cost roughly. I forecast each cost out to FY 2015 assuming 4% annual inflation.
3. Using the analysis of fixed and variable costs in the previous section, I labeled each ledger code’s price elasticity with respect to demand as Low, Medium, or High. For example, Boiler Insurance is a fixed cost with no elasticity. Linens are a variable cost with low elasticity due to bulk purchasing. Kits for indigent inmates have medium elasticity because they are purchased in smaller quantities. Contracted medical services have high elasticity because of constrained local supply. I then assigned a percentage modifier for each ordinal label and applied it to the estimates from Step 2.
4. The standard service unit is the inmate-day. There are 365 days in a year. At 100% capacity, the jail holds 375 inmates. At 90% capacity, it holds 338. At 120% capacity, it holds 450. I simply divided the costs in Step 3 to arrive at a unit cost for each load level.

**Table 3: Operating Expenditures According to Modified Compensation Board Categories**

	90% Use	Per Unit	100% Use	Per Unit	120% Use	Per Unit
<b>Security Services</b>	\$6,703,621	\$54.42	\$7,063,245	\$51.60	\$8,822,595	\$53.71
<b>Salaries: 96 FTE at 100%</b>	\$6,587,324	\$53.47	\$6,934,025	\$50.66	\$8,667,531	\$52.77
<b>Supplies &amp; Equipment</b>	\$116,298	\$0.94	\$129,219	\$0.94	\$155,063	\$0.94
<b>Food Services</b>	\$1,666,272	\$13.53	\$1,776,157	\$12.98	\$2,114,810	\$12.88
<b>Salaries: 10 FTE at 100%</b>	\$686,180	\$5.57	\$722,294	\$5.28	\$902,868	\$5.50
<b>Supplies &amp; Equipment</b>	\$980,092	\$7.96	\$1,053,863	\$7.70	\$1,211,942	\$7.38
<b>Medical Services</b>	\$1,297,019	\$10.53	\$1,474,919	\$10.78	\$1,843,649	\$11.22
<b>Salaries: 4 FTE at 100%</b>	\$288,918	\$2.35	\$288,918	\$2.11	\$361,147	\$2.20
<b>Supplies &amp; Equipment</b>	\$1,008,101	\$8.18	\$1,186,002	\$8.66	\$1,482,502	\$9.03
<b>Inmate Programs</b>	\$551,651	\$4.48	\$583,853	\$4.27	\$693,100	\$4.22
<b>Salaries: 6 FTE at 100%</b>	\$411,708	\$3.34	\$433,377	\$3.17	\$520,052	\$3.17
<b>Supplies &amp; Equipment</b>	\$139,943	\$1.14	\$150,477	\$1.10	\$173,048	\$1.05
<b>Transportation</b>	\$166,788	\$1.35	\$169,269	\$1.24	\$210,346	\$1.28
<b>Salaries: 2 FTE at 100%</b>	\$144,459	\$1.17	\$144,459	\$1.06	\$180,574	\$1.10
<b>Supplies &amp; Equipment</b>	\$22,329	\$0.18	\$24,810	\$0.18	\$29,772	\$0.18
<b>Administration</b>	\$1,044,490	\$8.48	\$1,116,404	\$8.16	\$1,260,233	\$7.67
<b>Salaries: 11 FTE at 100%</b>	\$754,798	\$6.13	\$794,524	\$5.80	\$873,976	\$5.32
<b>Supplies &amp; Equipment</b>	\$289,692	\$2.35	\$321,880	\$2.35	\$386,256	\$2.35
<b>Maintenance &amp; Utilities</b>	\$1,674,398	\$13.59	\$1,762,524	\$12.88	\$1,938,776	\$11.80
<b>Salaries: 9 FTE at 100%</b>	\$617,562	\$5.01	\$650,065	\$4.75	\$715,071	\$4.35
<b>Supplies &amp; Equipment</b>	\$1,056,836	\$8.58	\$1,112,459	\$8.13	\$1,223,705	\$7.45
<b>Total Salaries: 138 FTE @ 100%</b>	\$9,490,947	\$77.04	\$11,195,561	\$81.79	\$12,221,219	\$74.41
<b>Total Supplies &amp; Equipment</b>	\$3,613,292	\$29.33	\$3,978,710	\$29.07	\$4,662,289	\$28.39
<b>Total Operating</b>	\$13,104,239	\$106.38	\$15,174,272	\$110.86	\$16,883,509	\$102.79

One important observation in this budget is that the 375-inmate stated capacity is actually an inefficient output level. RSW can probably operate more efficiently at a slight overcrowd without significantly reducing effectiveness and safety.

Because this estimate borrows so heavily from the NRJ budgets, it carries the bias of the general management efficiency of that institution. I am assuming that the RSW jail in the Front Royal area will not be run much better or worse than NRJ in Winchester. This example budget, while rough, illustrates some important trends and provides a template for future work with better data and additional resources.

The most important observation on the expenditure side relates to personnel costs. Jail employees receive overtime pay as load exceeds capacity: maintenance workers stay longer to address greater equipment wear, and food service workers stay longer to prep and clean up. However, when load is under capacity, it is not easy to temporarily reduce the number of salaried staff. Labor costs per unit are actually lower at a 120% load.

However, programs that reduce personnel costs, particularly in the largest program, Security, are likely to be a good value. In the pretrial services program, for example, a small staff with office and travel expenses can keep dozens of inmates out of cells, reducing the need for overtime security as well as other inmate-related expenses in laundry, food, and healthcare. House arrest programs using electronic monitoring are also highly cost-effective. The fiscal benefits of the Community Corrections activities are not clear in the line-item budget presentation. This flexible program budget helps, but I was not able to accurately determine the marginal cost of each additional inmate at different load levels.

Table 4: Debt Service and Total Cost by Occupancy Load						
	90% Use	Per Unit	100% Use	Per Unit	120% Use	Per Unit
Debt Service	\$4,538,923	\$36.85	\$4,538,923	\$33.16	\$4,538,923	\$27.63
Total Cost	\$17,643,162	\$143.22	\$19,713,195	\$144.02	\$21,422,432	\$130.43

Applying unit costs to the optimistic amortization of debt on page two of Appendix A yields the figures shown in Table 4. The first years after completion have the greatest debt service costs, because 5-, 10-, and 25-year bonds must all be repaid.



## Revenues

**Table 5: FY 2015 Revenue Estimate for RSW Regional Jail**

Source			100% Load	Change Action	120% Load
<b>Own</b>	<b>Work Release</b>	\$20/day, 30 workers	\$219,000	Increase to 50 workers	\$365,000
	<b>House Arrest</b>	\$20/day, 20 participants	\$146,000	none	\$146,000
	<b>Local Transfer</b>	69 inmates, \$110.86 per inmate-day	\$2,792,009	\$102.79 * 139	\$5,215,051
	<b>Medical Co-Pay</b>	.66 NRJ10, 10% inflation	\$58,310	20% more	\$69,971
	<b>Phones</b>	.66 NRJ10, 4% inflation	\$140,523	20% more	\$168,628
	<b>Misc. Fees</b>	.66 NRJ10, 4% inflation	\$11,242	20% more	\$13,490
<b>Local</b>	<b>Rappahannock</b>	7.2% of Local Cost	\$717,160		\$596,375
	<b>Shenandoah</b>	29.5% of Local Cost	\$2,938,366		\$2,443,480
	<b>Warren</b>	63.3% of Local Cost	\$6,305,035		\$5,243,128
<b>State</b>	<b>State Beds</b>	20 beds, \$20 per inmate-day	146000	Increase to 25 beds	\$182,500
	<b>Comp. Board</b>	42% of Total Salaries (\$11.2m)	\$4,702,136	\$12.2 mil	\$5,132,912
	<b>Per Diem</b>	\$10 per inmate-day	\$1,368,750		\$1,642,500
<b>Fed.</b>	<b>Grants</b>	.66 of NRJ 10	\$168,664	20% more	\$202,397
		Total Non-local Revenue	\$9,752,634		\$13,138,449
		Total Local Revenue	\$9,960,561		\$8,282,983
		<b>Total Revenue</b>	<b>\$19,713,195</b>		<b>\$21,421,432</b>

Table 5 shows a revenue forecast for RSW Regional Jail in FY 2015. It draws heavily from the revenue statement at Northwestern Regional Jail. Enrollment in the Work Release and House Arrest programs is realistic. However, an administrative initiative to expand the programs could increase revenue. A critical factor is the third own-source revenue line, Transfer Beds. Currently, all of the jails around RSW except Northwestern are considerably overcrowded. Under state law, localities can send inmates to another jail if they pay the average daily cost at the receiving jail. Because of fixed costs, the average cost exceeds the marginal cost of the transferred inmate, and the receiving facility makes a profit on the transaction.

Combining the inmate population trends for the three counties in RSW’s service yields only 286 inmates for FY15. The state likely reserves about twenty beds for its own use, at the low reimbursement rate of \$20/day. The jail can receive sixty-nine inmates from other jails and be at 100% capacity. This transfer generates some \$5.2 million in revenue. If RSW operates at 120% capacity, still on the low end of crowding compared to its local peers, it can accommodate five more state beds and seventy more transfers from other local jails. This expansion reduces Rappahannock County’s obligatory transfer to the RSW Regional Jail Authority by about \$120,000. Shenandoah County saves \$500,000, and Warren County saves just over \$1,000,000 compared to operation at 100% capacity.

The proportions of local cost – Warren County paying the most – rely on trending jail populations cited in the Compensation Board’s reports from the last eight years. Warren County showed the most growth in its jail population. Because all three counties are fairly small, the proportions of county expenditures in this example are probably inaccurate; a proportion of R:S:W = 0.15 : 0.40 : 0.45 may be more accurate. The table below shows costs to local governments under those proportions. Either way, in my estimate, the Total Local Revenue line is more reliable than any county estimate.

Table 6: Local Contributions by Occupancy Load			
County	Proportion	FY 2015 Expenditure, 100% Use	120% Use
Rappahannock	15%	\$1,494,084	\$1,242,447
Shenandoah	40%	\$3,984,224	\$3,313,193
Warren	45%	\$4,482,253	\$3,727,343
Total Local Expenditures		\$9,960,561	\$8,282,983

**Alternatives to RSW Regional Jail**

This narrative will briefly treat two alternatives to the proposed regional jail. The first is the status quo, maintaining the three county jails in their current state. The second is to renovate and expand the three county jails.

Support for the proposed regional jail is not universal in the tri-county area. Some citizens and law enforcement officers advocate simply maintaining the current system of three functioning county jails. The regional jail may prove to be a boondoggle, and the current system

has proven reasonably reliable and effective.

The status quo is the lowest cost option, at least in the short term. There is no debt to service, and the behavior of costs is well known. There is no technological learning curve and no tri-county partnership to negotiate. The three county jails are also near, or even adjacent to, the county courthouses, helping to speed trials. Having a community jail may also yield fairness benefits to inmates who can more easily receive visitors.

However, the three county jails also have significant problems. All are overcrowded to nearly double their stated capacity. Housing two inmates in a room for one poses hygiene and safety concerns. Obsolete architecture and technology may have contributed to suicides at Warren County Jail in June 2009 and February 2011, “It doesn’t help, [Sheriff Daniel] McEathron said, that Warren County has an outdated jail.”<sup>11</sup> The small scale of current facilities also precludes most inmate programs, including the rehabilitative, like GED courses, and the practical, like inmate workforce. These inefficiencies represent a potentially dangerous source of cost increases over time, and they also limit the effectiveness of the jail to the bare minimum of housing inmates. The Board of Corrections’ report plainly states, “All three facilities are in need of some major renovations.”<sup>12</sup>

Renovating and expanding the three jails is perhaps a more obvious solution than collaborating to build a new regional jail: simply fix the stated shortcomings by upgrading the facilities. All three received some rehabilitation work in 1991, and another, more extensive renovation twenty years later could address the stated problems.

Renovated county jails retain some benefits of the status quo. They remain in the principal towns of each county, close to the courthouses and convenient for business and visitation. Operating fully within the county sheriffs’ departments, they are organizationally simple, with no need for a regional jail authority comprised of three counties’ elected officials. Individually, the renovation projects could align more closely with the policies, plans, and finances of each county. Considering the current state of their budgets, a gradual renovation with smaller, piecemeal debt issues might cost counties less in the short run than a regional jail.

Yet triple renovations have several problems. Most importantly, the necessary additions may not be technically possible. The Shenandoah County jail dates to the 1830s: its brick shell may not accept another story, expanded basement, or wing. And with every neighboring jail seriously overcrowded, there is no cheap or simple solution of moving the jails’ current inmates while the renovations are underway. With their downtown locations, additional wings may face steeper real estate costs. Finally, expanded local jails may still face barriers to implementing modern programs for inmates; for example, all three counties face growing Hispanic populations, but each alone may not reach the critical mass of Hispanic inmates

11 Ben Orcutt. “Warren County inmate dies days after attempted hanging.” *Northern Virginia Daily*. March 5, 2011. Available at <http://www.nvdaily.com/news/2011/03/warren-county-inmate-dies-days-after-attempted-hanging.php>.

12 Virginia Department of Corrections. Annual Report of Board of Corrections: Approved Jail Projects.

necessary to justify language classes for inmates or staff, resulting in service inequities. Cooperation and regional partnerships are a possibility, but distance imposes transaction costs.

**Cost-Benefit Analysis**

I have no information on the alternative of renovating the existing jails. Further, the benefits of jail services defy quantification, so the plan below outlines a cost-benefit analysis which may be undertaken. A two-tiered methodology captures some of the complexity and uncertainty associated with major decisions like this one. The first level is a weighted score table to assess diverse qualitative benefits. The second level is a net present value analysis for the finances of each project. I provide fictional examples as academic illustrations. The fictitious values represent no deep research on the subjects, nor do they represent any conclusions or inclinations of mine. They simply illustrate the proposed methodology.

**Level 1: Weighted Score Table**

R. Gregory Michal writes, “A weighted score table is an effective way to evaluate alternatives when criteria differ in importance.”<sup>13</sup> While the bottom-line fiscal impact of the three jail proposals matters, the question of value is more complex and involves a number of factors. Weighted score tables present a list of criteria with a relative weight or modifier assigned to each. Each proposal receives a score for each criterion. Ideally, a valid quantitative measure will inform each score. The modifier then weights the score to yield a weighted score, and the proposal with the greatest total of weighted scores may be called the best value.

Bias enters weighted score tables easily. Assigning modifiers and scores contains some degree of subjectivity. At minimum, creating modifiers and assigning scores should be separate duties. Modifiers should reflect community preferences, possibly by using poll data or focus groups. If scores are not clearly linked to transparent data, then keeping democratic representation available for scoring is equally important.

A fictitious weighted score table for the three jail proposals follows in Appendix C. In the example given, the regional jail has the highest score and would be the best choice. However, the option to renovate and expand the local jails is not far behind, and a slight change to the scores or weights in even one category would return a different decision.

A final benefit to using weighted score tables may be community engagement. If planners and elected officials opt to include weighted score tables in decision making, and if they try to improve the tools’ validity by involving local communities, then not only will the result be more accurate, but the process itself contributes to local democracy and buttresses the legitimacy of the decision

Weighted tables assist decision making when projects are dissimilar. However, when proposal are similar and the benefits can be quantified, net present value analysis provides a more reliable quantitative comparison of costs to benefits. This tool considers the monetary

13 R. Gregory Michal. *Decision Tools for Budgetary Analysis*, 15.

value of each proposal's costs and benefits over a number of years. It then applies a discount rate to assess the time value of money. Money's time value is the idea that a sum now is worth more than the same sum later, considering that the sum now could, if nothing else, be invested for interest. Net present value analysis considers that important difference.

Net present value analysis attempts a complete consideration of costs and benefits. Quoting Michal's discussion of the tool, the following are five important rules, with explanations and examples from the jail deliberations.<sup>14</sup>

1. "Forecast benefits and costs in today's dollars." Inflation creates an extra layer of distortion. Using real dollars for salary and supply costs enables a more meaningful comparison over time.
2. "Do not include sunk costs." Payments already made and which cannot be recouped by any proposal are sunk. The money already spent in studying the regional jail is sunk, as are last year's funds devoted to maintaining jails, which may soon be demolished.
3. "Include opportunity costs." The benefits foregone by choosing a certain proposal are opportunity costs. If the counties do not build the regional jail, one opportunity cost might be the income foregone by not demolishing old local jails and selling the prime downtown property.
4. "Use expected value to estimate uncertain benefits and costs." When forecasting years into the future, costs and benefits become less certain, so a given cost or benefit should be multiplied by the probability of its occurring. For example, the regional jail projects a large revenue stream from other localities. But they may act simultaneously to build their own capacity, or state laws may change to sharply reduce the number of offenders, leaving the RSW Regional Jail under capacity and in the red. Projected benefits should assign a probability to this eventuality and reduce the magnitude of the benefits.
5. "Omit non-monetary costs and benefits." Intangibles do not belong in the net present value analysis. The regional jail project may be a political boon for local legislators, but that is not quantified. Nor is the risk to the lives of law enforcement officers or inmates, because human lives are not easily appraised.

Appendix D shows sample net present value tables for the three jail proposals. The first page uses a 3 percent discount rate, a fairly high opportunity cost for current funds, and the second page uses a 10 percent discount rate, a lower opportunity cost. The totals show both the net present value – the difference between net present benefit and cost – and the ratio of benefits to costs. The pair of figures is important in cases like this one, wherein the magnitude of projects varies.

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<sup>14</sup> R. Gregory Michal. *Decision Tools for Budgetary Analysis*, 15.

In the first example, the proposal to renovate and expand the existing jails has by far the best net present value. The regional jail actually incurs a net loss over 20 years. An important factor in the result is the high initial costs of construction for the regional jail and how it earns no return for four years, when the discounting is least impactful; conversely, the other two proposals continue to stable returns for most of the period.

In the second example, the lower opportunity cost for current funds diminishes the impact of the regional jail's low initial benefits and high construction costs. With a 10% discount rate it earns a solid net benefit greater than that of the status quo. However, the expansion/renovation proposal remains most efficient.

### **Concluding Concerns for Planners and Elected Officials**

Four new regional jails exist near Rappahannock, Shenandoah, and Warren counties, in both rural and suburban areas. The localities that chartered those four regional jail authorities determined that cooperating to build a single consolidated facility would reduce local costs while improving effectiveness of service delivery. The calculations involved are complex, so planners and elected officials in the three rural counties concerned here should not rush to judgment, nor should they rely on the conclusions of their four regional peers. A rigorous cost-benefit analysis is necessary to determine whether a regional jail is in fact a better solution than renovating and expanding the local jails or doing nothing and maintaining the status quo.

In this case, such analysis was never published or presented to local citizens. On September 3, 2010, the RSW RJAs announced the purchase of two parcels totaling 28 acres for \$3.3 million.<sup>15</sup> On December 9, the authority awarded the architecture contract for \$2.15 million.<sup>16</sup> The regional jail remains projected to open in 2014.

Limitations of my analysis extend to the trends in operating costs, the elasticity of different costs with respect to inmate load, and especially in quantifying the benefits of different proposals. I lacked enough data points over time and from different institutions to properly forecast trends in operating costs, so there is considerable uncertainty in each line of the estimated RSW operating budget for 2015. Because I probably failed to label many fixed costs as such and instead treated them as variable, the operating budget likely shows too high a total cost and too much change according to load. The operating cost at 100% capacity of \$15,174,000 is a pessimistic figure.

However, this error may be partly offset by my use of the optimistic state reimbursement for construction. Local leaders should push the state agencies for prompt reimbursement of local expenses. If state reimbursement happens within the acceptable timeframe for paying contractors, local debt issue and borrowing costs fall by as much as 50 percent. Even establishing reliably when the state payments will arrive could prevent some unnecessary borrow-

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15 Orcutt, Ben. "Purchase of jail land finalized." *Northern Virginia Daily*. September 4, 2010. Available at <http://www.nvdaily.com/news/2010/09/purchase-of-jail-land-finalized.php>.

16 Outlaw III, Linwood. "Authority approves new jail's architect." *Northern Virginia Daily*. December 10, 2010. Available at <http://www.nvdaily.com/news/2010/12/authority-approves-new-jails-architect.php>.

ing. This kind of coordination between levels of government breaks down often enough to warrant a recommendation: RSW Jail Authority staff should monitor state reimbursement activity and partner with state agency staff to avoid surprises in reimbursements.

I am not certain that a regional jail will reduce the expenditures of each county on jail services. A regional jail will provide more stable expenditures versus the more erratic year-to-year costs of a county jail. The counties may accept a higher, more stable cost curve versus one that is highly variable. Additionally, the regional jail does allow for a broader scope of programs for inmates. However, a new facility does not automatically provide diverse opportunities for inmates: a regional jail may certainly be a simple warehousing operation with no efforts to train or rehabilitate. The regional jail's larger inmate volume provides economies of scale for inmate programs; GED classes, work release partnerships with local firms, and the like may be practical with a 400-bed regional jail but not with an 80-bed county jail. Counties may be willing to pay more for the capability for such programs, even if they do not intend to use them in the first year of operation. Excess capacity and potentiality have real value.

Planners might also consider the worsening state of the Commonwealth's jails generally. Inmate populations are growing faster than capacity, and almost all of Virginia's jails are overcrowded. If constructed, the RSW Regional Jail could easily absorb 100 inmates from Northern Virginia. The system of compensation whereby sending localities pay the receiving jail at average (rather than marginal) cost expresses the benefits of reduced crowding. However, the state government could acknowledge the broader benefits of building regional jails with excess capacity. The RSW Regional Jail is unusual in the way that it helps wealthy Northern Virginia, some 80 miles away. As the three rural counties build it, some extra state assistance with capital costs might be justified.

The RSW Regional Jail has the potential to bring three rural counties into the current century of penal realities. Improving services to inmates could help prevent future crimes while providing interdependent support for the highly populated suburbs. The jail also has the potential to be an unhappy boondoggle for three counties that cannot afford such a large mistake. The operating costs of such a big project could sap their budgets, and the large debt issue could damage the credit they need for schools. But recent trends in corrections suggest that if you build it, they will come.



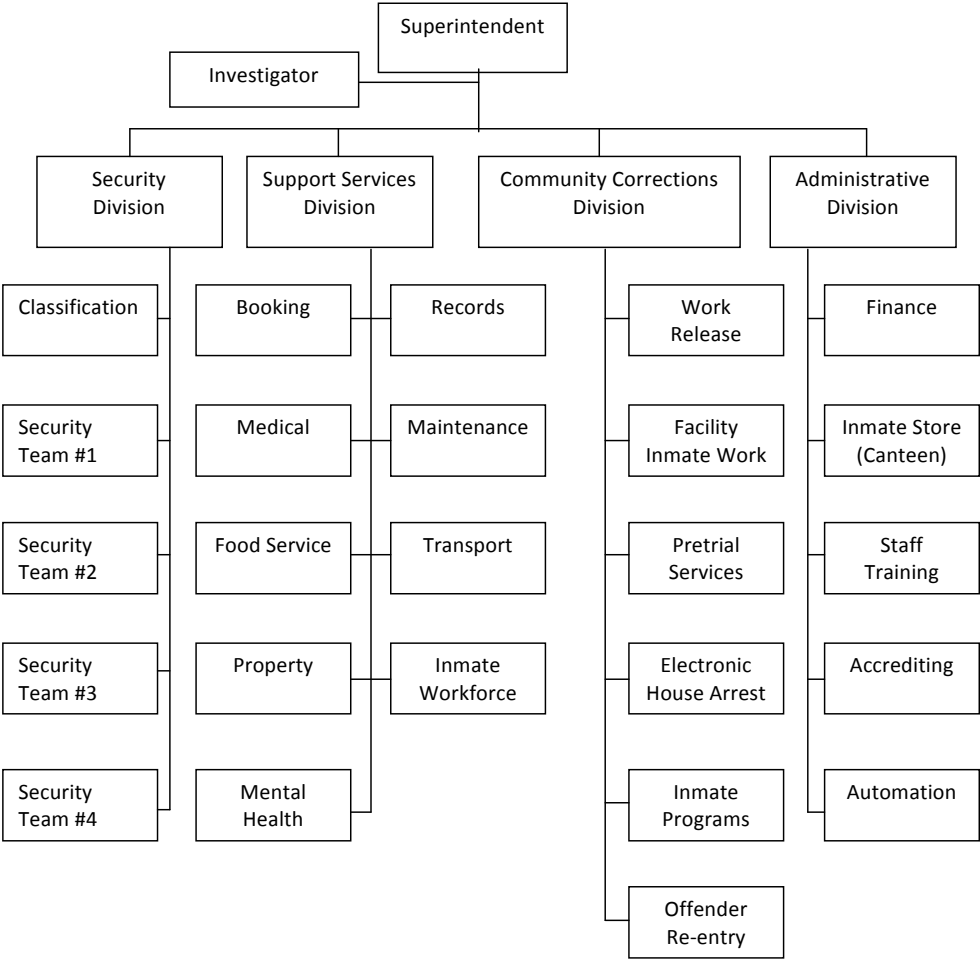
Appendix A: Amortization Tables					
<b><i>This amortization table shows a pessimistic reimbursement assumption.</i></b>					
<b>5-year Bonds, 3.25% coupon</b>					
Principal Owed at Beginning of Year	Annual Payment	3.25% Interest	Repayment of Principal	Principal Owed at End of Year	
\$22,767,000	\$4,838,143	\$739,928	\$4,098,216	\$18,668,784	
\$18,668,784	\$4,838,143	\$606,735	\$4,231,408	\$14,437,377	
\$14,437,377	\$4,838,143	\$469,215	\$4,368,928	\$10,068,448	
\$10,068,448	\$4,838,143	\$327,225	\$4,510,919	\$5,557,530	
\$5,557,530	\$4,838,143	<u>\$180,620</u>	\$4,657,523	\$900,007	
		<u>\$2,323,722</u>			
<b>10-year Bonds, 3.75% coupon</b>					
Principal Owed at Beginning of Year	Annual Payment	3.75% Interest	Repayment of Principal	Principal Owed at End of Year	
\$22,767,000	\$2,678,750	\$853,763	\$1,824,987	\$20,942,013	
\$20,942,013	\$2,678,750	\$785,325	\$1,893,424	\$19,048,589	
\$19,048,589	\$2,678,750	\$714,322	\$1,964,427	\$17,084,161	
\$17,084,161	\$2,678,750	\$640,656	\$2,038,093	\$15,046,068	
\$15,046,068	\$2,678,750	\$564,228	\$2,114,522	\$12,931,546	
\$12,931,546	\$2,678,750	\$484,933	\$2,193,817	\$10,737,729	
\$10,737,729	\$2,678,750	\$402,665	\$2,276,085	\$8,461,645	
\$8,461,645	\$2,678,750	\$317,312	\$2,361,438	\$6,100,207	
\$6,100,207	\$2,678,750	\$228,758	\$2,449,992	\$3,650,215	
\$3,650,215	\$2,678,750	<u>\$136,883</u>	\$2,541,866	\$1,108,349	
		<u>\$5,128,844</u>			

25-year Bonds, 5% coupon					
Principal Owed at Beginning of Year	Annual Payment	5% Interest	Repayment of Principal	Principal Owed at End of Year	
\$22,767,000	\$1,560,954	\$1,138,350	\$422,604	\$22,344,396	
\$22,344,396	\$1,560,954	\$1,117,220	\$443,734	\$21,900,662	
\$21,900,662	\$1,560,954	\$1,095,033	\$465,921	\$21,434,741	
\$21,434,741	\$1,560,954	\$1,071,737	\$489,217	\$20,945,524	
\$20,945,524	\$1,560,954	\$1,047,276	\$513,678	\$20,431,846	
\$20,431,846	\$1,560,954	\$1,021,592	\$539,362	\$19,892,484	
\$19,892,484	\$1,560,954	\$994,624	\$566,330	\$19,326,154	
\$19,326,154	\$1,560,954	\$966,308	\$594,646	\$18,731,508	
\$18,731,508	\$1,560,954	\$936,575	\$624,379	\$18,107,129	
\$18,107,129	\$1,560,954	\$905,356	\$655,598	\$17,451,532	
\$17,451,532	\$1,560,954	\$872,577	\$688,377	\$16,763,154	
\$16,763,154	\$1,560,954	\$838,158	\$722,796	\$16,040,358	
\$16,040,358	\$1,560,954	\$802,018	\$758,936	\$15,281,422	
\$15,281,422	\$1,560,954	\$764,071	\$796,883	\$14,484,539	
\$14,484,539	\$1,560,954	\$724,227	\$836,727	\$13,647,811	
\$13,647,811	\$1,560,954	\$682,391	\$878,563	\$12,769,248	
\$12,769,248	\$1,560,954	\$638,462	\$922,492	\$11,846,756	
\$11,846,756	\$1,560,954	\$592,338	\$968,616	\$10,878,140	
\$10,878,140	\$1,560,954	\$543,907	\$1,017,047	\$9,861,093	
\$9,861,093	\$1,560,954	\$493,055	\$1,067,899	\$8,793,194	
\$8,793,194	\$1,560,954	\$439,660	\$1,121,294	\$7,671,899	
\$7,671,899	\$1,560,954	\$383,595	\$1,177,359	\$6,494,540	
\$6,494,540	\$1,560,954	\$324,727	\$1,236,227	\$5,258,313	
\$5,258,313	\$1,560,954	\$262,916	\$1,298,038	\$3,960,275	
\$3,960,275	\$1,560,954	\$198,014	\$1,362,940	\$2,597,334	
		\$18,854,186			
Total Interest Cost:		\$26,306,752			
Total Cost of Funding and Interest:		\$92,306,752			

<b>Amortization Tables with Optimistic Reimbursement Assumption</b>					
<b>5-year Bonds, 3.25% coupon</b>					
Principal Owed at Beginning of Year	Annual Payment	3.25% Interest	Repayment of Principal	Principal Owed at End of Year	
\$11,383,000	\$2,419,072	\$369,948	\$2,049,124	\$9,333,876	
\$9,333,876	\$2,419,072	\$303,351	\$2,115,721	\$7,218,155	
\$7,218,155	\$2,419,072	\$234,590	\$2,184,481	\$5,033,674	
\$5,033,674	\$2,419,072	\$163,594	\$2,255,477	\$2,778,197	
\$2,778,197	\$2,419,072	<u>\$90,291</u>	\$2,328,780	\$449,417	
		<u>\$1,161,774</u>			
<b>10-year Bonds, 3.75% coupon</b>					
Principal Owed at Beginning of Year	Annual Payment	3.75% Interest	Repayment of Principal	Principal Owed at End of Year	
\$11,383,000	\$1,339,375	\$426,863	\$912,512	\$10,470,488	
\$10,470,488	\$1,339,375	\$392,643	\$946,731	\$9,523,756	
\$9,523,756	\$1,339,375	\$357,141	\$982,234	\$8,541,522	
\$8,541,522	\$1,339,375	\$320,307	\$1,019,068	\$7,522,455	
\$7,522,455	\$1,339,375	\$282,092	\$1,057,283	\$6,465,172	
\$6,465,172	\$1,339,375	\$242,444	\$1,096,931	\$5,368,241	
\$5,368,241	\$1,339,375	\$201,309	\$1,138,066	\$4,230,175	
\$4,230,175	\$1,339,375	\$158,632	\$1,180,743	\$3,049,432	
\$3,049,432	\$1,339,375	\$114,354	\$1,225,021	\$1,824,411	
\$1,824,411	\$1,339,375	<u>\$68,415</u>	\$1,270,959	\$553,452	
		<u>\$2,564,199</u>			

<b>25-year Bonds, 5% coupon</b>						
Principal Owed at Beginning of Year	Annual Payment	5% Interest	Repayment of Principal	Principal Owed at End of Year		
\$11,383,000	\$780,477	\$569,150	\$211,327	\$11,171,673		
\$11,171,673	\$780,477	\$558,584	\$221,893	\$10,949,780		
\$10,949,780	\$780,477	\$547,489	\$232,988	\$10,716,792		
\$10,716,792	\$780,477	\$535,840	\$244,637	\$10,472,154		
\$10,472,154	\$780,477	\$523,608	\$256,869	\$10,215,285		
\$10,215,285	\$780,477	\$510,764	\$269,713	\$9,945,572		
\$9,945,572	\$780,477	\$497,279	\$283,198	\$9,662,374		
\$9,662,374	\$780,477	\$483,119	\$297,358	\$9,365,015		
\$9,365,015	\$780,477	\$468,251	\$312,226	\$9,052,789		
\$9,052,789	\$780,477	\$452,639	\$327,838	\$8,724,951		
\$8,724,951	\$780,477	\$436,248	\$344,229	\$8,380,722		
\$8,380,722	\$780,477	\$419,036	\$361,441	\$8,019,281		
\$8,019,281	\$780,477	\$400,964	\$379,513	\$7,639,768		
\$7,639,768	\$780,477	\$381,988	\$398,489	\$7,241,279		
\$7,241,279	\$780,477	\$362,064	\$418,413	\$6,822,866		
\$6,822,866	\$780,477	\$341,143	\$439,334	\$6,383,533		
\$6,383,533	\$780,477	\$319,177	\$461,300	\$5,922,232		
\$5,922,232	\$780,477	\$296,112	\$484,365	\$5,437,867		
\$5,437,867	\$780,477	\$271,893	\$508,584	\$4,929,283		
\$4,929,283	\$780,477	\$246,464	\$534,013	\$4,395,270		
\$4,395,270	\$780,477	\$219,764	\$560,714	\$3,834,557		
\$3,834,557	\$780,477	\$191,728	\$588,749	\$3,245,807		
\$3,245,807	\$780,477	\$162,290	\$618,187	\$2,627,621		
\$2,627,621	\$780,477	\$131,381	\$649,096	\$1,978,525		
\$1,978,525	\$780,477	\$98,926	\$681,551			
		\$9,425,900				
Total Interest Cost:		\$13,151,873				
Total Cost of Funding & Interest:		\$46,151,873				

Appendix B: Organization Chart for Northwestern Regional Jail



Appendix C: Sample Weighted Score Table for Jail Proposals							
		Maintain Existing County Jails		Expand Existing County Jails		Construct New Regional Jail	
Criteria	Weight (1-10)	Score (1-10)	Weighted Score	Score	Weighted Score	Score	Weighted Score
Requires Debt Issue	6	10	60	5	30	1	6
Initial Costs	8	10	80	6	48	2	16
Future Costs	7	3	21	5	35	6	42
Convenient Downtown	3	10	30	10	30	1	3
Displaces Current Inmates	6	8	48	3	18	10	60
Reduces Escape Risk	7	2	14	7	49	9	63
Anticipates Local Population Growth	9	2	18	7	63	8	72
Ameliorates Statewide Jail Crowding	4	3	12	6	24	10	40
Facilitates New Programs for Inmates	3	2	6	4	12	6	18
Improves Inmate Living Conditions	3	2	6	7	21	7	21
		<b>Total</b>	<b>295</b>	<b>Total</b>	<b>330</b>	<b>Total</b>	<b>341</b>

Appendix D: Net Present Value Analysis										Cost and Benefits are in millions of dollars and refer to the three localities only. This table uses a 3% discount rate. The next table uses a 10% discount rate.									
	Maintain County Jails						Expand County Jails						Construct Regional Jail						
Fiscal Year	Costs	Benefits	NPC	NPB		Costs	Benefits	NPC	NPB		Costs	Benefits	NPC	NPB		Costs	Benefits	NPC	NPB
2011	1.8	3.3	1.8	3.3		1.8	3.3	3.3	1.8		3.3	1.0	0.0	3.3		1.0	0.0	1.0	0.0
2012	2.7	3.3	2.6	3.2		6.0	3.3	5.8	3.2		6.0	11.0	0.0	10.7		11.0	0.0	10.7	0.0
2013	2.4	3.3	2.3	3.1		6.0	3.3	5.7	3.1		6.0	11.0	0.0	10.4		11.0	0.0	10.4	0.0
2014	2.5	3.3	2.3	3.0		6.0	3.3	5.5	3.0		6.0	11.0	0.0	10.1		11.0	0.0	10.1	0.0
2015	2.6	3.3	2.3	2.9		3.0	6.0	2.7	5.3		3.0	8.3	10.0	7.4		8.3	10.0	7.4	8.9
2016	2.7	3.3	2.3	2.8		3.0	5.9	2.6	5.1		3.0	8.3	9.9	7.2		8.3	9.9	7.2	8.5
2017	2.8	3.3	2.3	2.8		3.0	5.9	2.5	4.9		3.0	8.3	9.8	7.0		8.3	9.8	7.0	8.2
2018	2.9	3.3	2.4	2.7		3.1	5.8	2.5	4.7		3.1	8.4	9.7	6.8		8.4	9.7	6.8	7.9
2019	3.0	3.3	2.4	2.6		3.1	5.8	2.4	4.6		3.1	6.4	9.6	5.1		6.4	9.6	5.1	7.6
2020	3.1	3.3	2.4	2.5		3.1	5.7	2.4	4.4		3.1	6.4	9.5	4.9		6.4	9.5	4.9	7.3
2021	3.2	3.3	2.4	2.5		3.2	5.7	2.4	4.2		3.2	6.4	9.4	4.8		6.4	9.4	4.8	7.0
2022	3.3	3.3	2.4	2.4		3.2	5.6	2.3	4.0		3.2	6.5	9.3	4.7		6.5	9.3	4.7	6.7
2023	3.4	3.3	2.4	2.3		3.2	5.6	2.2	3.9		3.2	6.5	9.2	4.6		6.5	9.2	4.6	6.5
2024	3.5	3.3	2.4	2.2		3.3	5.5	2.2	3.7		3.3	6.5	9.1	4.4		6.5	9.1	4.4	6.2
2025	3.6	3.3	2.4	2.2		3.3	5.5	2.2	3.6		3.3	5.0	9.0	3.3		5.0	9.0	3.3	6.0
2026	3.7	3.3	2.4	2.1		3.3	5.4	2.1	3.5		3.3	5.1	8.9	3.3		5.1	8.9	3.3	5.7
2027	3.8	3.3	2.4	2.1		3.4	5.4	2.1	3.4		3.4	6.4	9.9	4.0		6.4	9.9	4.0	6.2
2028	3.9	3.3	2.4	2.0		3.4	5.3	2.1	3.2		3.4	6.4	9.8	3.9		6.4	9.8	3.9	5.9
2029	4.0	3.3	2.3	1.9		3.4	5.3	2.0	3.1		3.4	6.4	9.7	3.8		6.4	9.7	3.8	5.7
2030	4.1	3.3	2.3	1.9		3.5	5.2	2.0	3.0		3.5	6.5	9.6	3.7		6.5	9.6	3.7	5.5
	63.0	66.0	46.8	50.6		71.3	102.8	55.5	77.4		141.8	152.4	110.7	109.7					



This table uses a 10% discount rate. The previous table uses a 3% discount rate.													
Cost and Benefits are in Millions of Dollars and Refer to the Three Localities Only													
	Maintain County Jails				Expand County Jails				Construct Regional Jail				
Fiscal Year	Costs	Benefits	NPC	NPB	Costs	Benefits	NPC	NPB	Costs	Benefits	NPC	NPB	
2011	1.8	3.3	1.8	3.3	1.8	3.3	1.8	3.3	1.0	0.0	1.0	0.0	
2012	2.7	3.3	2.5	3.0	6.0	3.3	5.5	3.0	11.0	0.0	10.0	0.0	
2013	2.4	3.3	2.2	3.0	6.0	3.3	5.5	3.0	11.0	0.0	10.0	0.0	
2014	2.5	3.3	2.3	3.0	6.0	3.3	5.5	3.0	11.0	0.0	10.0	0.0	
2015	2.6	3.3	2.4	3.0	3.0	6.0	2.7	5.5	8.3	10.0	7.5	9.1	
2016	2.7	3.3	2.5	3.0	3.0	5.9	2.7	5.4	8.3	9.9	7.5	9.0	
2017	2.8	3.3	2.5	3.0	3.0	5.9	2.7	5.4	8.3	9.8	7.5	8.9	
2018	2.9	3.3	2.6	3.0	3.1	5.8	2.8	5.3	8.4	9.7	7.6	8.8	
2019	3.0	3.3	2.7	3.0	3.1	5.8	2.8	5.3	6.4	9.6	5.8	8.7	
2020	3.1	3.3	2.8	3.0	3.1	5.7	2.8	5.2	6.4	9.5	5.8	8.6	
2021	3.2	3.3	2.9	3.0	3.2	5.7	2.9	5.2	6.4	9.4	5.8	8.5	
2022	3.3	3.3	3.0	3.0	3.2	5.6	2.9	5.1	6.5	9.3	5.9	8.5	
2023	3.4	3.3	3.1	3.0	3.2	5.6	2.9	5.1	6.5	9.2	5.9	8.4	
2024	3.5	3.3	3.2	3.0	3.3	5.5	3.0	5.0	6.5	9.1	5.9	8.3	
2025	3.6	3.3	3.3	3.0	3.3	5.5	3.0	5.0	5.0	9.0	4.5	8.2	
2026	3.7	3.3	3.4	3.0	3.3	5.4	3.0	4.9	5.1	8.9	4.6	8.1	
2027	3.8	3.3	3.5	3.0	3.4	5.4	3.1	4.9	6.4	9.9	5.8	9.0	
2028	3.9	3.3	3.5	3.0	3.4	5.3	3.1	4.8	6.4	9.8	5.8	8.9	
2029	4.0	3.3	3.6	3.0	3.4	5.3	3.1	4.8	6.4	9.7	5.8	8.8	
2030	4.1	3.3	3.7	3.0	3.5	5.2	3.2	4.7	6.5	9.6	5.9	8.7	
	63.0	66.0	57.4	60.3	71.3	102.8	65.0	93.8	141.8	152.4	129.0	138.5	
	Net Present Benefit			2.9	Net Present Benefit			28.8	Net Present Benefit			9.5	
				1.05	BEST	NPB Ratio		1.44		NPB Ratio		1.07	

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