

# CLACKAMAS COUNTY BOARD OF COUNTY COMMISSIONERS

Sitting/Acting as (if applicable)

## Policy Session Worksheet

**Presentation Date:** 9/6/2016 **Approx Start Time:** 2:00 p.m. **Approx Length:** 30 minutes

**Presentation Title:** RFID (Radio Frequency Identification) Informational Session

**Department:** Business & Community Services – Library Network

**Presenters:** Greg Williams, Library Network Manager

**Other Invitees:** Laura Zentner, BCS Deputy Director  
Gary Barth, BCS Director  
George Marlton, Procurement Division Director

### WHAT ACTION ARE YOU REQUESTING FROM THE BOARD?

No action is being requested from the Board at this time. This is an informational session to familiarize the Board with the LINCC (Libraries in Clackamas County) RFID (Radio Frequency Identification) implementation project, and to provide information in preparation for future procurement and contracting actions.

### EXECUTIVE SUMMARY:

LINCC libraries and BCS Library Network are currently working on a cooperative project to implement RFID (Radio Frequency Identification) technology across the entire Library District. When complete, the project should enhance numerous aspects of the patron circulation experience, streamline the flow of materials between and within libraries, and offer libraries new opportunities for process improvement and collection security.

### FINANCIAL IMPLICATIONS (current year and ongoing):

**Is this item in your current budget?**  YES  NO

**What is the cost?** \$ The fiscal year 2016/2017 estimated project cost is \$1.8 Million. In addition, we estimate ongoing maintenance costs of \$180,000. The County will be reimbursed by Library Cities for a significant portion of these costs. We estimate up to \$700,000 of the initial costs will be expended by BCS Library Network, funded by cost savings and reserves. More detailed information will be provided as the procurement/contracting process proceeds.

**What is the funding source?** Library Network budget.

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**STRATEGIC PLAN ALIGNMENT:**

- **How does this item align with your Department's Strategic Business Plan goals?**

Grow a Vibrant Economy – Libraries play a vital role in supporting and developing local economies.

Build a Strong Infrastructure – The project will provide libraries with the modern infrastructure needed to deliver services which can meet the changing needs and expectations of citizens.

- **How does this item align with the County's Performance Clackamas goals?**

Grow a Vibrant Economy – Libraries play a vital role in supporting and developing local economies.

Build a Strong Infrastructure – The project will provide libraries with the modern infrastructure needed to deliver services which can meet the changing needs and expectations of citizens.

**LEGAL/POLICY REQUIREMENTS:**

Earlier in the year, Library Network conducted a *Request for Information* process to determine the availability of different solutions that may be compatible with existing software/equipment and would meet the needs of the LINCC Libraries and the Library Network. Through that process, we learned that only select vendors provide RFID and AMH solutions that are compatible with existing systems and provide required functionality. The other solutions offered may not be compatible with existing systems and may not provide required functionality. In addition, ensuring compatibility with these other solutions would likely be operationally and financially unfeasible. Library Network is coordinating with the Procurement Division to ensure that all procurement and contract policies will be followed.

**PUBLIC/GOVERNMENTAL PARTICIPATION:**

The RFID implementation project is a cooperative effort between Clackamas County and the partner cities within the Library District. Participation by the members of the Library District has been essential to ensure that the solution meets differing operational and budgetary needs.

**OPTIONS:** NA – Informational session only.

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**RECOMMENDATION:** Informational session only.

**ATTACHMENTS:**

- Final Report – Radio Frequency Identification (RFID) and Automated Materials Handling (AMH) Consultation (Galecia Group, June 7, 2016)
- LINCC RFID/AMH Implementation Project Summary
- RFID Project Update (PowerPoint slides)

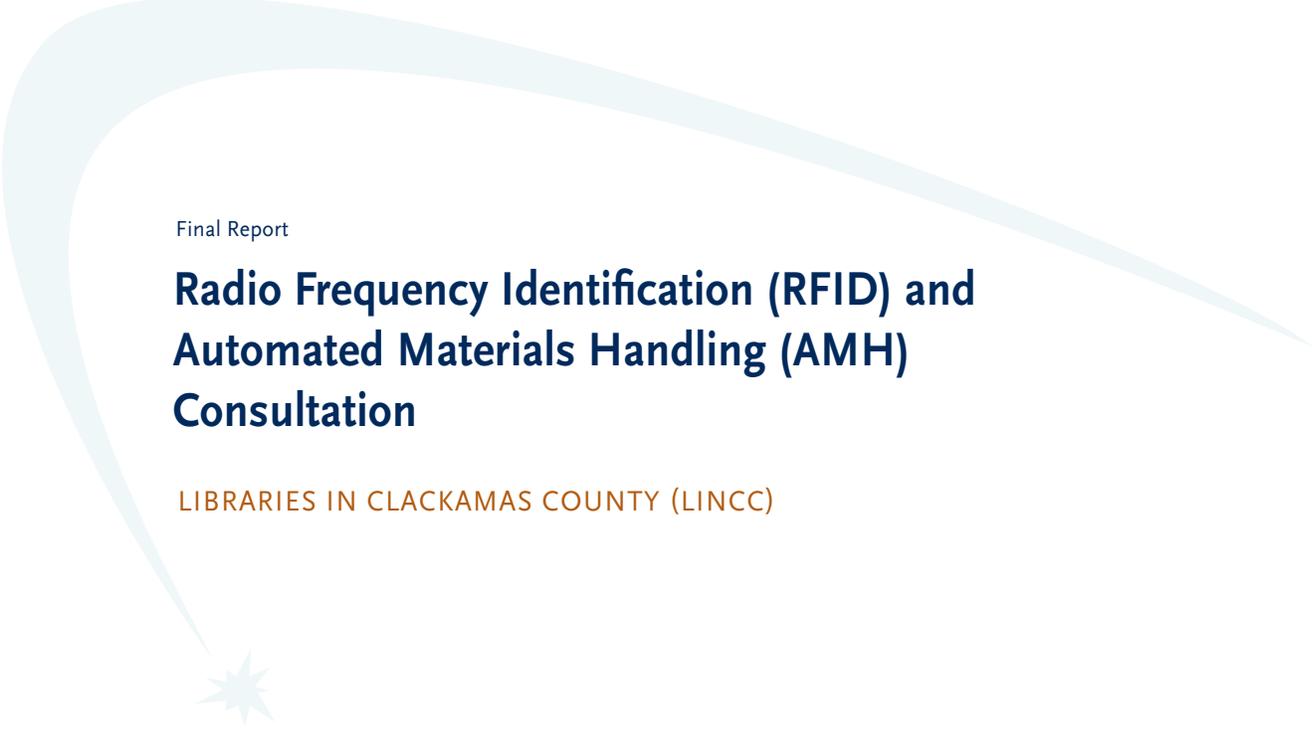
**SUBMITTED BY:**

Division Director/Head Approval \_\_\_\_\_

Department Director/Head Approval \_\_\_\_\_

County Administrator Approval \_\_\_\_\_

<p>For information on this issue or copies of attachments, please contact Greg Williams @ 503-723-4889.</p>
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Final Report

# **Radio Frequency Identification (RFID) and Automated Materials Handling (AMH) Consultation**

LIBRARIES IN CLACKAMAS COUNTY (LINCC)

June 7, 2016

prepared by **THE GALECIA GROUP**

## Contact

### About The Galecia Group

The Galecia Group provides technology consulting to libraries. We specialize in automated materials handling, RFID, self-service technologies and support for the organizational changes required to ensure the implementations are successful.

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## INTRODUCTION

The Library Network of Clackamas County (Library Network) provides services to 13 member libraries within the Library District of Clackamas County. The members of the Library District (LINCC) are the 11 cities in the County that operate public libraries: Canby, Estacada, Gladstone, Happy Valley, Lake Oswego, Milwaukie, Molalla, Oregon City, Sandy (which includes the Hoodland branch in Welches), West Linn, and Wilsonville. The twelfth member of LINCC is the Clackamas County Oak Lodge Library.

The independent member libraries share an integrated library system (ILS), Symphony. The unified computer system makes it very easy for individual citizens to borrow materials from any or all libraries throughout the county and to have those materials delivered via library courier to their home library for easy pick-up. Many of the “centralized” services are provided by the Library Network. This shared system and shared county-wide funding has created a seamless public library system in Clackamas County that has greatly facilitated the cost effective sharing of resources among these twelve library “partners” yet allows each local city or county library to retain its own autonomy and ability to tailor its collection and programs to the unique needs of its clientele.

LINCC contracted with The Galecia Group for the purposes of analyzing current materials handling workflows and processes and recommending processes for using radio frequency identification (RFID) and automated materials handling (AMH) technologies, and then assisting with the procurement of appropriate technologies.

The Galecia Group’s methodology included a consultative process that included site visits and analysis of the existing libraries and workflows along with recommendations. In addition, the team facilitated a process to lead the partners through a strategic sequence of activities to prioritize consortium and individual partner needs.

The work with the library partners and the site visits and analysis will inform the procurement process that follows the submission of this report.

This report provides a summary of the findings and recommendations related to RFID, AMH and other workflow improvements. The hope is that these recommendations will help each library make more informed self-service equipment and materials handling technology decisions and provide guidance as to how each library can better leverage staff and improve the customer experience.

## RECOMMENDATIONS OVERVIEW

The recommendations are broken down into two primary sections. The first section, Network Recommendations, contains a collection of recommendations that affect all partner libraries either because they are related to LINCC network activities or because the impact of the recommended changes will affect workflows at all libraries.

Each recommendation is described in detail including providing specific guidance as to how it should be implemented and what the expected benefits are.

The second set of recommendations is grouped by member library. For each library, we have provided a summary of key data upon which we've relied in the forming of our recommendations. We've also noted our observations and provide numerous photos to help clarify our findings and recommendations.

There is at least one set of recommendations for each library. Where an AMH system would provide improvements, we have suggested where it should be placed, what size it should be and how it should be configured. We've also made estimates of the staff time that could be saved with the proposed system and other benefits to be expected.

When we were able to identify other changes to the library spaces or workflow (beyond those recommended in the Network Recommendations) that would improve the customer or staff experience, we have also included those.

## NETWORK RECOMMENDATIONS

There are eight recommendations that address shared activities such as implementing RFID, central sorting, and modifying the management of holds. Many of these recommendations focus on the Library Network office because they coordinate or deliver many of these services already.

In addition to recommendations related to the existing services provided by Library Network, we offer up additional recommendations that suggest other ways to leverage the Library Network team and expand the services they offer to the benefit of all the member libraries.

### 1 IMPLEMENT RFID SYSTEM-WIDE

RFID is a technology widely employed in libraries to improve the patron experience using self-service technology including self-check-in and self-check-out. It also provides security for items while being transparent to the customer.

RFID speeds up all staff and patron circulation functions and makes the process more intuitive and ergonomic for everyone.

#### Benefits of RFID and Self-Check

The check-out process becomes simpler for patrons with RFID because they don't have to identify the barcode – instead, the items are checked-in or checked-out simply by bringing the item within range of the antenna embedded in the self-check equipment. A stack of several books can be checked-out all at once by placing the stack on the antenna (usually a visible pad or defined area on the self-check machine). Media is more finicky. Stacks of CDs and DVDs will cancel each other out due to the interference of the tags so they have to be spread out on the pad or placed on the pad two to four at a time.

After an initial training period, it is reasonable to expect that check-out speed for patrons will be 75-100% faster than with barcodes because at least two items will typically be placed on the pad at one time.

RFID benefits staff because it makes circulation functions faster and more ergonomic. RFID antennas can be installed underneath the staff counter or, if tapered, they can be placed on top of the counter. This way, staff simply slide items across the magnetic field to check-in or check-out without having to pick any items up. This capability can dramatically speed up all check-in and check-out workflows and reduces the occurrence of ergonomic injuries.

A modest estimate is that staff check-ins and check-outs using RFID is three times faster than the current system because staff will typically process at least three items at a time and often more.

#### RFID and Security

For libraries using security gates, the RFID tag serves to both identify the item and as a security mechanism. There is no additional step required to disable security after checking out an item. The security setting is set automatically by the RFID system during check-in or check-out and the RFID interacts with the RFID-enabled security gates to alarm or not.

Although they are never meant to be removed, it is possible to peel off the RFID tag. In this case, the items can be passed through the security gates undetected. It is also possible to block the RFID tag using metal or foil. Therefore, in addition to listening for gates to alarm, it is still important to be vigilant of suspicious behavior if theft is a significant problem. RFID security systems alone will not prevent theft but they are a better deterrent than RF systems like those installed at Lake Oswego, and much less labor intensive than security cases.

RFID tags come in many shapes and sizes and can be applied to books, periodicals, media cases, and the media itself. As a result, the tags can be used to ensure that neither the media case nor the disc walk out of the library unless they are both present during check-out or check-in. Therefore discs cannot be easily stolen by simply removing them from their case because the media itself will set off the alarm unless both parts of the set have been checked-out.

## RFID and Patron Experience

With RFID, patron and staff will be prevented from checking an item in or checking an item out if a DVD or CD case is empty. The RFID system sees the case and the disc as a set and it will alert the patron or staff that a part is missing. This capability prevents problems down the line such as claims returned issues, and the challenge of trying to match the case with the DVD when the two haven't been returned at the same time (and maybe not even to the same library). This set awareness of RFID also prevents patrons from arriving home eager to watch the movie they've been waiting for, only to find the disc is missing from the case.

The ability to identify the presence of the right disc in the right case is a great benefit but it has its limitations. Specifically, multiple discs in a set cannot be tagged without causing interference between tags. This means that books on CD are not completely protected since only one or two of several discs will be tagged.

## Implementation Cost of RFID

Implementing an RFID system involves many components. The tags must be purchased and applied, security gates must be replaced, self-check-out machines must be upgraded, and staff workstations must also be upgraded. The cost to implement RFID for LINCC is estimated at \$886,000.

The following chart shows how the cost of the RFID implementation in year one and how annual costs were calculated.

	Year 1 Cost	Description	Units	Unit Cost	Annual Cost
Tags	\$280,500	Book tags	850,000	13 cents	\$11,050
		AV tags	250,000	68 cents (one book tag and one 55 cent media tag)	\$17,000
Security Gates	\$5,000	Single aisle	1	\$5,000	\$500
	\$27,000	Double aisle	3	\$9,000	\$2,700
Self-Checks	\$320,000	New tabletop	40	\$8,000	\$32,000
Staff Workstations	\$39,000	Staff workstation upgrade kit	60	\$650	\$3,900
Five Conversion Stations for 30 Weeks	\$7,500	Lease Cost Per Month per Unit	7.5	\$200	0
Tagging	\$207,000	Tagging in-house rather than outsourcing (30 hours per week, 5 tagging teams of 2 people each, 30 weeks)			
<b>TOTAL YEAR 1</b>	<b>\$886,000</b>	<b>ANNUAL COST</b>			<b>\$67,150</b>

## RFID Implementation Recommendations

When considering RFID, there is a sequence that should be followed. For example, libraries that are implementing self-services such as self-check-in and self-check-out should implement RFID in concert with (or before) implementing these self-service technologies. The reason for this is that it is cheaper to implement self-check systems for RFID only. If the technologies must support barcode and RFID, the costs are higher. Also, the patron adoption rate is higher with RFID because the systems are more intuitive. Therefore, introducing self-check-in or seeking higher self-check-out rates with a new self-check-out system will be more successful after RFID has been implemented.

RFID implementation is always a team effort and it is especially true in a consortial environment where material is moving between different libraries. RFID touches every aspect of the library operation and all staff working at the libraries. It requires planning and coordination of each of the departments within each library as well as coordination across libraries.

### Prepare the Collection

Before purchasing RFID tags and beginning to tag the collection, it is important to remove items that are due to be removed from the collection. Putting a tag on an item that will be removed in the following month or two is a waste of money in tag costs. Each tag costs at least thirty cents to apply (if outsourced) and possibly more than that if the item is a set or it contains media. Removing items from the collection that will be weeded is a great way to reduce tagging costs.

In addition to weeding, it is important to identify any problem items in the collection such as material that has no barcode or for which there is a shared barcode number for all items of a certain type (e.g., paperbacks that get checked out as “paperback”). In order to achieve high rates of self-check, everything that circulates must have a unique barcode number. If magazines circulate, they need a tag and a unique barcode number even though it is tempting to say magazines are not worth tagging. Without a unique barcode number, patrons won’t be able to check-out items at the self-check machines but they will try and only after becoming frustrated will they go to the service desk.

If any items circulate under one barcode number, this must be rectified before implementing the new self-check system because the self-check unit often cannot allow a patron to check-out a barcode number that is already checked out. Self-checks don’t have the same override power that a staff check-out interface has so they just won’t work. That said, it is possible to create workarounds but all known workarounds create unintended and undesirable consequences so it is better to either stop circulating these kinds of items or give the items a unique barcode number and tag them.

### Set-up Tagging Lab and Develop LINCC Tagging Plan

Another piece of work that needs to be undertaken before commencing the tagging operation (whether done internally or outsourced) is to develop a tagging plan that achieves the desired balance of improved security versus improved patron experience. In a library environment, this can be tricky. In a consortial environment, it is even more tricky, because the needs of the different libraries are not necessarily aligned and also because material is packaged differently at different libraries.

For this reason, it is recommended that LINCC Library Network staff set up a tagging lab that includes a set of security gates and a self-check unit to be used to test the effects of different tags on the range of material types in the system. Each library could submit samples of material types in their collections for which they have a specific priority and Network staff would test different tagging strategies and report back on the optimal strategy for achieving the library’s goal. For example, perhaps new DVDs are a high theft item at a location with security gates so their number one priority is to ensure that these DVDs do not walk out of the library without being checked out. In testing, LINCC might determine that a Stingray tag on each disc is the only way to ensure the security of the material and recommend modifying how multi-disc DVDs are packaged and tagged in order to protect these items.

Another library might prefer to find the best way to prevent patrons from returning any media item with a disc missing. Again, depending on the packages they are using, it may be that smaller hub tags work better for them because more items can be tagged with hub tags than Stingray tags and the improved detection rate of Stingray tags at the security gates isn’t a concern for them. Still another library might prefer to reduce their tagging costs as much as possible and could choose to put a low-cost book tag on the case and leave the discs untagged.

As a consortium, it is important to respect each library’s needs while also ensuring everyone is cognizant of the ramifications of each decision. For example, in the above scenario, each library’s decision has ramifications at another library when items move around the system. The media items with just a tag on the case won’t achieve the goals of the library wishing

to ensure missing items in a tagged set are detected before a patron goes home with them. The Stingray tags will help prevent losses at libraries with security gates but they won't do any good at libraries choosing not to install security gates.

Therefore, the first step is to articulate each library's priorities and identify methods for addressing those priorities. Then the next step is to explore what happens as material moves around the system based on a tagging strategy that addresses those priorities. It makes more sense to find ways to compromise on a LINCC-wide tagging strategy in order to achieve as many of the member goals as possible instead of pursuing a strategy that is undercut as soon as material moves from one library to another.

#### Establish tagging deadline in advance of self-check rollout

Once the tagging strategy has been defined for the LINCC system, it is time for each library to get their collection tagged. Some libraries have expressed a desire to tag their own collection, others wish to outsource tagging. Either way, as long as tagging is done according to the LINCC tagging plan and tagging is completed by a date certain, it shouldn't matter who is doing the tagging. However, it is important to ensure that all items in the collection are tagged by the time the self-checks are rolled out.

Without a 100% tagged collection, the roll-out of the self-checks will be compromised. Patrons will have to scan barcodes instead of relying on the much more user-friendly RFID reader that seems to check-out items "automagically." Instead of being delighted with the new system, patrons will be disappointed, if not angry, that money was spent with so little benefit. Rolling out new self-checks with RFID can be very positive and result in more library use (because it is so much faster) and higher self-check rates (because it is so easy and even a little fun). But rolling out a new RFID-based self-check and then having patrons bump into untagged items can undermine all the goodwill of the new system. Therefore, it is critical that the entire collection be tagged before rolling out the new RFID self-checks.

#### Turn on security gates only after all libraries are using RFID-based circulation

When switching to an RFID-based security system from an EAS-based security system (like some LINCC libraries are using now), it is important to understand the ramifications of introducing RFID-tagged items into the system and planning a strategy for turning on the new RFID gates.

The easiest approach is to leave all gates turned off until all libraries have their RFID circulation and self-check equipment in place. The reason for this is that it is important to prevent situations where the alarms sound erroneously. False alarms undermine the security system because staff can quickly get into the habit of waving people through.

If items are RFID tagged but checked-out using barcode only, the RFID tag will still have the security set to the alarm position. These items will set off the gates even though that patron has a checked out item. Preventing this situation can be tricky if everyone converts to RFID circulation equipment on a different schedule.

Waiting to turn on the gates until everyone is using RFID to circulate items is the most straight-forward strategy for ensuring the gates are as effective as possible once you do turn them on.

#### Prepare talking points for staff and patrons about the new system

Both RFID and self-check can be troubling to staff and the public. Staff may worry that their jobs are at risk or they may feel that seeking higher self-check rates is unfair to patrons who are being asked to do their jobs. And related to this desire to protect one another, some patrons resist using self-checks because they fear library staff are being phased out.

There can sometimes be concerns related to the technology itself. RFID, as a technology based on electro-magnetic radiation, sometimes raises questions about its safety. Because RFID signals are radio waves and invisible, some people are concerned about the privacy ramifications.

For all of the above reasons, it is important to develop talking points. These can be used for management to use when talking with staff and also for staff to use when talking to the public. Depending on the issues that are most likely to arise in each library and each community, the talking points may differ somewhat but there needs to be a consistent and positive message. In most cases, the reason for using these technologies is to increase opportunities for staff to interact with patrons in meaningful ways. Getting this message across is an important factor in achieving high adoption rates.

## 2 CREATE TRANSIT/HOLDS SLIP AND LABEL AT SENDING LIBRARY

The current workflow involves at least one set (and in some libraries such as Molalla and Lake Oswego two sets) of “slips” for an item that is pulled off one library’s shelf to fill a hold at another location. After printing the pick list, library staff look for the items on the list and when they are found, bring the items to a workstation. They scan each item thereby generating the routing slip. The routing slip shows the name of the destination library and indicates whether the item is being sent there to fill a hold (transit hold) or to be returned to that location (transit return). The routing slip is used by staff and sometimes the couriers for sorting individual items.

In most LINCC member libraries, instead of generating a routing slip, the libraries sort items into designated crates, based on a visual prompt provided by the Symphony ILS. Each library keeps an open crate for each other LINCC member library and this way, they can “presort” items immediately instead of labeling them and then sorting them (or having the couriers sort them).

Once the crates are delivered to the destination library, each item is scanned by staff. When transit holds are scanned, a different slip is printed – the hold slip. The hold slip identifies the patron that requested the item. Staff place the hold slip inside the book or media case (and sometimes rubberband it as well). Eventually the item goes on the hold shelves (sometimes for self-service pick-up and sometimes behind the service desk).

In this recommendation, we propose that Symphony be configured to generate a slip that can be used as a hold slip at the first point of contact with the item (when staff pull the item and scan it). By placing a label into (or onto) the item at the sending library, the receiving library can save the handling time of removing the routing slip (when applicable), printing a different hold slip, and attaching the hold slip to the item. The hold slip will already be on all transit holds.

In order to ensure that the new hold slip doesn’t fall out of the item during transit and sorting, we recommend the libraries consider using MAXStick labels which are sticky enough to stay on but easy to remove. The MAXStick labels come in multiple colors so they can be color-coded for each date, making it extremely easy for staff to identify expired holds.



MAXStick labels being used for hold labeling. Depending on the ILS, this label can be put on at the sending library and used as both the routing label and the hold label.

### 3 AUTOMATE LINCC SORTING AND IMPLEMENT TOTE CHECK-IN

Although the LINCC courier operation is to be commended for their efficient operation, there are still opportunities for reducing the incoming delivery check-in process at the libraries and reducing the presorting workload at the libraries for outbound deliveries. The way to achieve these additional benefits is to add an automated central sorter at LINCC and discontinue presorting in the libraries.

#### How the New Sort Operation Would Work

Instead of presorting items into bins or using labels on individual library items, the new central sorter would be configured to communicate with Symphony using SIP2 (a standard communication protocol supported by all library management systems including Symphony). The sorter then conveys the barcode number to Symphony which reports back pertinent information about the item. This information is used to sort the material based on the “sort plan.”

“Sort plans” define how items will be sorted by using item status, item format, owning location, destination location, whether the item is on its way to fill a hold, or any combination of these variables. Sort plans can be changed by authorized library staff and there can be multiple sort plans that can be utilized for different times of day or purposes.

With a central sorter like the one recommended for LINCC, each sort destination is setup with a delivery crate. Each branch would be represented on the sorter so that material could be inducted by couriers and the sorter would drop items in the correct crate for that branch. Two couriers would empty items from crates onto the sorter (aka “induct items”). Depending on the design of the sorter, this can be done at one or more induction workstations or perhaps just on a section of the conveyor designed for this purpose. Another courier would remove full crates and replace them with empties.

#### Benefits

Automated central sorters provide many benefits throughout the system.

##### Library Staff Can Discontinue Presorting for Delivery

Library staff working in the branches will no longer need to sort items nor, where applicable, place a Transit Slip on items, because the sorter will query the library system to find out where the item is going instead of relying on presorted crates or labels on items. All material that goes to another library will simply be dropped in a crate and as the crate is filled, another crate can be added to the same stack.

##### More Accurate Sorting

Using the central sorter, every item will be accurately sorted since it is based on the barcode instead of routing slip placed on the item or a label on a crate. Using human-applied (if not human-written labels) and having humans read those labels introduces three possible error points: labeling, reading labels, sorting from labels/screen prompts. These three errors points are eliminated with a central sorter.

##### Crate Check-in

Crate check-in is another benefit that is a huge time-saver for the libraries and it requires no additional work for couriers.

The way crate check-in works is that each crate receives a unique identification number, and each item sorted into a crate is associated with that particular crate. In other words, the sorter creates a manifest for each crate as it works. The result is that the receiving library can then check-in the crate (using a barcode number or “license plate” on the crate itself). As a result of that crate check-in, each barcode associated with an item inside the crate is uploaded into Symphony where it is recorded as “received” just as if a staff person had scanned each individual item.

At 15 seconds per item to check-in delivery, it is projected that LINCC library staff spend 24.5 hours per day checking-in courier deliveries. Assuming it takes 20 seconds to check-in each crate, it would take less than one hour per day (.86 hours) to check in the same number of items. In other words, crate check-in will save LINCC library staff a total of 23.7 hours each day. Saving 23.7 hours per delivery day adds up to 8,444 hours of staff time saved per year.

### Savings for Libraries from Eliminating Presorting

Almost all the sorting of delivery items is done by library staff. Each library presorts items to a separate crate for each LINCC library location. The space needed for presorting is never less than 8 square feet of floor space (and sometimes more because some libraries need to have more than one stack for certain libraries).

#### Crates set out for sorting into at Molalla

By shifting to a central sorter, the libraries would no longer need to use all that space because all items would be intermingled – no separation by destination would be necessary.

More importantly, the library staff would no longer have to sort items into crates. Libraries often ignore the time spent presorting because it is seen as part of the check-in process. It seems like it just takes a few seconds to step over to the appropriate crate and drop the item in. However, if you add up all those seconds, they add up. Assuming a sort rate of 300 items per hour, we estimate LINCC libraries spend 19.61 hours per day presorting outgoing delivery items.

While presorting won't be entirely eliminated and items will still need to be put in crates, this number will be reduced quite a bit with the proposed solution. If we eliminate just 10 hours per day in presorting (system-wide), we would save LINCC libraries 3,421 hours per year.

#### Courier Sort Time Needed Daily

Some of the presorting time will be absorbed by the courier staff. With the proposed solution, courier staff will induct all items on the sorter where they will be sorted according to the sort plan.

Couriers currently spend approximately 30 minutes per day sorting items on the truck. Each courier then spends another 30 minutes per day sorting crates between trucks. With two couriers, this adds up to two hours per day in courier sort time.

To determine how much time couriers will need to sort all the items going through delivery, we can assume that couriers will be able to place items onto the sorter at a speed of 1200 items per hour (about 3.3 seconds each). This means the couriers will be able to induct 2400 items per hour because there will be two induction points. For FY14-15, the LINCC couriers delivered over 1.6 million items and sorted 356 days that year for an average of about 5,883 items per day. Given this volume, all the items could be sorted in 2.45 hours each day with two (2) people inducting items and one (1) person handling the staging of crates and replacing full crates with empties on the sorter. If a third person wasn't available, the sorting would take a bit longer because the induction would have to stop periodically to handle swapping out full crates and replacing them with empties.

Switching the burden from the libraries doing presorting to the couriers doing item level sorting will require some staffing adjustments at LINCC. Instead of spending 712 person hours per year, they will be spending 2,618 person hours per year. Some of the drive time will be reduced since there will be no more item-level sorting on the truck. At the very least, the net result as a system is still a savings of 2.26 sorting hours saved per day, or 803 fewer sorting hours per year overall.

Another consideration is that courier sorting will be reduced if some presorting continues. While presorting to all locations is not recommended, there is an advantage to presorting to one or more "down-route" locations. In this scenario, the library might set aside one or two crates that they sort to instead of throwing everything into a mixed crate for sorting at LINCC. Those two dedicated crates would be for libraries next in line on the delivery route. Couriers can then drop off these dedicated crates without taking them back to the sorting facility.

While down-route, same day delivery has some advantages, there are also drawbacks. Because the items are not being sorted on the central sorter, they will not be set-up for crate check-in. Each item in the crate will have to be checked in the old-fashioned way – one at a time.

Finding the right balance of presorting and central sorting will take time and some experimentation. Whether a library wants to presort to certain locations sometimes depends on whether they have an AMH system. Libraries with an AMH system may be able to designate one sort destination to that down-route location which means the sending library doesn't have to do any presorting. Libraries with an AMH system might prefer to get same-day deliveries even if they can't use

the crate check-in feature. These libraries can simply induct each item received and let their AMH system do the checking in and printing of hold slips.

It is also important to coordinate presorting and delivery with the holds targeting settings in the integrated library system (Symphony.) However, with the strong team at the Network office including the staff running courier services and the ILS administrator, and by keeping communications open, LINCC libraries will soon benefit from the best of both worlds.

**Configuration and Cost of Interlibrary Delivery Sorter**

The size of the central sorter will depend on the ability to implement Network Recommendation #2. If hold slips can be applied to items at the point they are pulled, then deliveries to each library can be a mix of returns and holds (with the slip already on them). However, if hold slips need to be printed out by the receiving library, it is important to separate holds and returns for each location.

To be safe, we shall assume that the sorter must have enough sort destinations to provide at least two locations for each of the 13 LINCC libraries plus the Library Network and another for items that are not read by the sorter (the so-called exceptions bin) so a 29-bin sorter is the minimum recommendation

The cost of a 29-bin with two staff inductions configured to sort to crates and create a crate manifest which will support batch check-in for the libraries is estimated at \$360,000.

**Savings from Central Sorting with Crate Check-in**

The central sorter will cost approximately \$360,000\* to purchase and \$36,000 per year in maintenance. A conservative hourly rate for someone doing library materials handling work is \$14.95. If we add up the hours saved and value those hours at \$14.95, we see that the value of the time saved is \$149,037. Subtracting the annual support costs from the savings results in a payback of just over three years for the central sorter.

**Summary of Savings per Year**

<b>HOURS</b>	<b>+3,431</b>	<b>+ 8,444</b>	<b>-1,906</b>	<b>+ 9,969</b>	
	Library hours saved from reducing presorting couriers sorting with AMH	Library hours saved per year with crate check-in	Additional courier hours spent sorting	Total hours saved per year	
					<b>COSTS</b>
					x \$14.95 conservative hourly rate of library circulation staff
				\$149,037 value of time saved	
				-\$36,00 annual maintenance	
				<b>\$113,037 saved per year</b>	

\* If Network Recommendation #2 can be implemented, the size of the sorter could be reduced to 17 bins which would reduce the central sorter cost to \$255,000 for a payback period of just over two years.

**4 CENTRALIZE AND STANDARDIZE SELF-CHECK EXPERIENCE AND WORK TO ACHIEVE 85% SELF-CHECK-OUT RATE SYSTEM-WIDE**

Approximately 40 new self-check-out units are needed system-wide. The number 40 was arrived at by evaluating check-out volume at each location and using the formula of one self-check plus an additional one for every 150,000 annual check-outs. This number can be modified up or down depending on the self-check-out rate goal desired. In this case, we have selected 85% as the self-check-out target rate because, at 85%, it becomes possible to move staff from the service desk and out into the library or into the community.

The reason to increase self-check-out to 85% is not to reduce contact with patrons but to facilitate more contact with patrons outside of the context of circulation transactions. In order for this to happen, circulation desks may need to be reduced in size and become “accounts” desks. Also, staff that were previously staffing the circulation desk will need to be redeployed to other areas of the library; possibly as rovers or located at smaller help stations that don’t provide check-in, check-out, or accounts services.

In order to ensure patrons can complete their circulation transaction at the self-checks without having to also visit another service point, each self-check should be configured to accept fines and fees payment via credit/debit card. The newer self-check units can be used to promote library events and can be integrated with the catalog for the purposes of providing recommendations as patrons check-out. The Bibliotheca/3M unit can be integrated with the 3M Cloud Library so that recommended titles can be immediately downloaded. It is also possible to add support for other municipal services (e.g. paying utility bills or parking tickets).

For the above reasons, more self-check-out machines are needed to ensure that patrons don’t have to stand in line for check-out, checking the library calendar of events, paying fines and fees, and getting online recommendations. Having enough self-check-outs is critical to achieving a high self-check rate so that people can be moved off the circulation desk to do other kinds of work with patrons.

Using the above formula, the ideal number of self-checks needed for each library is:

Library	Current Number of Self-Checks	Number Needed Using 150K Rule	Additional Self-Checks Needed
Canby	1	3	2
Estacada	2	2	0
Gladstone	2	2	0
Hoodland	1	1	0
Happy Valley	3	4	1
Lake Oswego	1	6	5
Milwaukie	1	4	3
Molalla	1	3	2
Oak Lodge	1	2	1
Oregon City	1	3	2
Sandy	1	3	2
West Linn	4	4	0
Wilsonville	2	3	1
<b>Totals</b>	<b>21</b>	<b>40</b>	<b>19</b>

## Centralize Management of Self Check Units

Going forward, it would be beneficial for LINCC to standardize with one self-check product and have it centrally managed by Library Network. Library Network has the staffing, and more importantly, the expertise, to centrally manage all self-check units. Management tasks include applying updates in a timely manner, ensuring the systems are secure, monitoring them to ensure they are operating properly, troubleshooting them when they are not, and working closely with the vendor to manage support calls and managing the service and support contract. Centralizing management of the self-checks will save money and likely result in excellent support because the Library Network team will be able to monitor all support issues and keep pressure on the vendor (if needed) and proactively prevent issues that arise.

It would also be possible to keep spare units (or at least spare parts) on site at the Network office so that when there are issues with a self-check, the spare could be immediately put in place and the problem unit taken out of service and repaired. Keeping a spare is unreasonable for any one library, but it is a very practical approach to take when supporting self-check at the consortial level.

The Network office also has the expertise to provide enhancements that could be rolled out to all LINCC libraries. While the ability to provide enhancements to a product will depend on the product selected, the current Envisionware OneStop product was customized at West Linn to the betterment of the patron experience. Rather than being siloed at one library, these kinds of customizations could be rolled out to all LINCC libraries going forward.

## Support Self-Check Use with Excellent Signage

An often neglected way to improve the rate of self-check use (both self-check-in and self-check-out) and reduce workload for staff is to provide clear, consistent, accurate, and informative patron-focused signage and wayfinding that provides the right information at just the right place. With good wayfinding, the number of requests for basic help from staff can be significantly reduced and patrons are empowered to find what they want to find and do what they need to do independently.

The term ‘wayfinding’ in a library setting covers a range of information aimed at the patron, including orientation guides or directories, overhead signs identifying key services such as the Reference Desk, signs identifying facilities and rooms, directional signs to guide patrons around the building, user guides for self-service offerings such as computers or payments, and identification labels on shelf ranges. When a library is littered with post-it notes and taped up notices on 8-1/2 x 11” paper, it is the result of a shortfall with the wayfinding scheme.

In the case of most of the LINCC libraries, it was less a matter of too many signs and post-it notes and more a matter of not enough. A common problem with wayfinding is that without a careful hand combined with a patron-focused strategy, it is very easy get it wrong: either too much information or too little, or information in the wrong place at the wrong time in the patron’s experience through the library.

A successful wayfinding scheme needs consistency in the look, feel, content and location of the elements. It must be visible and legible within the interior background in which it is placed. The wayfinding elements should be scaled appropriately to the reading distance and angles, and above all be easy to read, understand and respond to.

In addition to improving the patron experience, a wayfinding project is an opportunity for a library to create a strong sense of place, to build and reinforce their identity, and add an attractive aesthetic layer to the building.

The Galecia Group has worked with Wendy Wilsher ([wilsherdesign.com](http://wilsherdesign.com)) on a number of occasions and we highly recommend her work. She is currently working with two of our clients now, Huntington Beach Library and Charleston County Public Library, on similar wayfinding projects related to supporting those libraries’ self-service goals.

## Cost of New Self Checks

Should the libraries decide to replace all their legacy self-checks with state-of-the-art units, they would benefit from the features now available on self-checks such as the integration with the library events calendar, recommendations, and the ability to pay fines and fees with credit or debit cards. The new systems provide PCI-compliant and EMV-compliant credit/debit card systems and are much more attractive than the existing self-checks being used. Purchasing new self-checks would be an opportunity to upgrade all the libraries and provide a much improved and consistent patron experience.

New self-checks come in three form factors: component, tabletop and kiosk. Component systems are essentially computers. They look like computers with a screen and peripherals such as a keyboard, barcode scanner and RFID pad.

They are not sexy, inviting, attractive, or even interesting. But they are cheaper than the other choices. If combined with the right signage, they can be made a bit more compelling but it is hard to achieve high rates of self-check with component computers because they are easily overlooked and patrons assume they will be hard to use.

Tabletop self-checks have a little bit more going for them in the sense that they don't look like just another PC on a table. They often feature touch screens and integrated barcode and RFID pads so they are much cleaner in presentation. The primary feature is the screen, which can include some of the components mentioned above (e.g., promoting events or services). They are versatile in that they can be placed on existing tables and counters. And, though they are more expensive than component self-checks, they are cheaper than stand-alone kiosks.

Kiosk style self-checks take self-check to a new level. They can be free-standing anywhere in the library (assuming you can get power and network connectivity to that spot) and they are interesting and even attractive. Children, in particular, are very drawn to the kiosks and will flock to them to do their own check-outs. They can be themed (the interface) and wrapped (the unit itself) so they fit into the library environment (e.g., whimsical images for the one in the children's area).

For budgetary purposes, a reasonable estimate for a new kiosk-style self-check is \$10,000 (with fines and fees payment by credit/debit card), \$8,000 for a new tabletop and \$6,500 for a component style self-check unit.

To provide new kiosk style self-checks for LINCC members and distribute them to each library according to the 150,000/circulation formula would cost approximately \$400,000. To provide new tabletop self-checks for LINCC members would cost approximately \$320,000.

Depending on the model of self-check currently in use, it may be possible to upgrade the existing units to RFID. This is not the case with the legacy 3M self-check currently at Lake Oswego; however in most cases, the libraries are using Envisionware's OneStop product which is possible to upgrade to RFID by adding an RFID pad to the existing units.

Although it would be less expensive to add the RFID pad to the OneStop units, the majority of the OneStop units are component models with computers that were originally manufactured between 2008 and 2012. A standard replacement schedule for PCs is three years so these units are either due for replacement or way overdue. Considering a wholesale replacement of self-checks system-wide is timely especially if the management can be taken over by LINCC network staff as part of the process.

## 5 CENTRALIZE MANAGEMENT OF HOLDS RATIO PURCHASES

Although LINCC members share Symphony, the library system that is managed by LINCC network staff, collection purchasing is largely done on an individual basis by each library, including purchases associated with holds ratio purchase alerts. Holds ratio purchase alerts are alerts that are generated by Symphony when the number of holds on a particular title exceeds a threshold. The idea is that the threshold is set to signal that additional copies of a title should be purchased in order to meet demand.

The LINCC libraries have all agreed on a 5:1 ratio as the threshold value for this alert. When a title has more than five holds for every copy of a title, the title will appear on their Purchase Alert Report which LINCC staff send out to each library. There is also a system-wide report of titles that generated the alert.

Each library evaluates the Purchase Alert Report they receive for titles they own and makes an independent decision about whether they should buy more or not.

One of the benefits of a resource-sharing network like LINCC is that items purchased from one library can fill holds for another library's patrons. Therefore, it would make sense to coordinate purchases centrally to ensure that libraries are not making duplicative purchases.

## 6 STANDARDIZE POLICIES AND CENTRALIZE MANAGEMENT OF PC RESERVATION, PRINTER AND SCANNER MANAGEMENT SYSTEMS, AND FAX SERVICES

Most of the libraries in the system use a popular print management system from Envisionware, LPT:One, as well as Envisionware's public computer management system, PC Reservation. However, even at libraries using the same system, the policies differ. Some libraries give a certain number of printed pages away for free and then charge. Others charge for every printed page. Some libraries have scanners or fax services. Others don't.

As a result of this inconsistency, patrons arrive at one library with expectations based on another library experience and end up being disappointed that they can't do what they expected to do or that it costs more to do the same thing.

Ideally, every library would offer the same set of services including printing, scanning, faxing and public computer use but some of the libraries do not offer these services because they feel they cannot handle the management of those services.

Each of these services would be easier for libraries to provide if they were managed centrally by LINCC network staff. The Network office would also ensure that the interface for the patron was consistent and that all the equipment was kept in good working order. In addition, LINCC staff could help with building a consistent set of policies across all the libraries thereby providing a better customer experience.

In addition, working centrally would allow the libraries to learn from another and take advantage of policies, equipment choices, and practices that are working well. For example, one library suggested having the option to redirect print jobs from the public printer to a staff printer so that situations where one patron is monopolizing the printer won't hold up everyone's print jobs. This is a good idea that would work at many other libraries.

Staff at more than one library indicated they would like to provide faxing and scanning services but felt they were unable to support it. Standardizing on a service such as the popular FaxScan24 (<http://www.fax24.us/>) with support from the Network office as the primary contact for the outsourced service would enable all the libraries to add these services.

## 7 STANDARDIZE PRACTICES FOR SETTING ITEMS TO MISSING WHEN NOT FOUND THE FIRST TIME

How each library works with their pick list has a big effect on the patron experience and also on every library's workload. It takes each library at least an hour and sometimes closer to three hours to go through the list of items to be pulled every day to fill holds. Once they are pulled, they are scanned into Symphony to link the specific item to a specific request and the item is put into transit to the pick-up location. (As noted in Recommendation #2, eventually the goal is to attach a hold slip to the item at this point in the workflow.)

Based on discussions with staff at each library, the impression is that all the libraries are very proactive about working through their pick list every day and getting as many items into the day's courier delivery as possible.

Where there are differences between the libraries is how they deal with the items that are not found. Some libraries leave items on their list for another day or two or three and then if the item is still not found, they set it to Missing status. Other libraries never set the status to Missing because they know that after 6 months, Symphony will change the status if the requested item hasn't been found. The customer service ramification of the inconsistent Pick List handling isn't entirely clear but it is definitely not optimal.

The ideal procedure is to look for items on the library's Pick List for one day, and if the item is not found that day, set it to Missing status. The reason for setting the item to Missing is that it will cause the Symphony to move the request to a different item at a different library. This means the patron might only have a one day delay in getting their item. If the item that was set to Missing is later found, the status of Missing will be changed so there is no harm in setting it to Missing and it provides for much better service to the patrons.

## 8 EVALUATE USE OF VOLUNTEERS AND SHARE BEST PRACTICES

Volunteers have long been a staple in public libraries; however, how libraries use those volunteers is changing. One reason volunteer work is changing is because of automation and the ways library spaces are changing. Many of the tasks that used to be done by volunteers are now being done by the kind of automation being recommended here. Although shelving will always need to be done by people, libraries are reducing collection sizes in favor of using the spaces for other activities so there is less shelving required than at other times.

Another reason the work of library volunteers is changing is because of the generational change of volunteers. People that have volunteered for years at their local library are getting older and older and the work of shelving is not well suited to seniors. The newer volunteers (e.g., baby boomers) may still be agile enough for the hard work of materials handling and shelving work but they don't want to do it. They are more interested in helping advocate for the library or representing the library at community events, or using their professional experience to deliver services to the community at the library (e.g., mentoring, teaching English, helping teens with homework, supporting job seekers, etc.).

In addition to the changing role of volunteers, it is also worrisome when libraries rely on volunteers to provide services that are critical to the library's operation. Materials handling tasks including shelving and pulling holds and maintaining the collection are all critical tasks and it might be more efficient to add these tasks to the workload of paid staff and begin thinking about harnessing the energy of volunteers to provide other types of services that take advantage of their skill sets and abilities.

Another consideration is the high cost of managing volunteers. For example, at West Linn, one staffperson spends half of her time managing the volunteers (.5 FTE). West Linn volunteers put in 4,579 hours of work last year, which sounds like a lot of time. But to put it in context, those hours amount to only 2.2 FTE. Put another way, every hour a volunteer works at West Linn requires 15 minutes of skilled staff time. West Linn isn't alone. Lake Oswego and Wilsonville also rely heavily on volunteers.

All the libraries would benefit from an analysis of the costs and benefits of their volunteers. For example, it might be that all the libraries should be using the software used by West Linn (Volgistics) which makes scheduling much less staff-intensive. Applying some data, conducting an objective analysis, and identifying current Best Practices<sup>1</sup> would help all the partners identify ways to use volunteers more effectively and more appropriately for the current generation of volunteers looking to support their local library.

<sup>1</sup> See Volunteer Involvement in California Libraries – Best Practices available from:  
<http://www.library.ca.gov/lids/getinvolved/docs/F-resources/VolunteerInvolvementInCaliforniaLibraries-BestPractices.pdf>

## LIBRARY SPECIFIC RECOMMENDATIONS

### LIBRARY AMH CONSIDERATIONS WITH LINCC CENTRAL SORTER

An automated materials handling (AMH) system in a library (as opposed to a central sorter environment like at LINCC) includes not just sorting and a staff induction but also one or more self-service check-in points for patrons.

Ideally, there would be self-check-in options outside of the library as well as inside the library so that patrons could return material 24 hours a day. In that case, it is important to size the AMH system so that it can handle all the items that might be returned during closed hours. This can get tricky when trying to accommodate longer closures such as end of year holidays. In sizing systems, we have looked at the number of returns received per day (on average) to gauge how many items might be returned. Hopefully, if the system can absorb this number of items, it will be able to accept and sort them and eliminate the need for staff to come to the library over the holidays to empty bins or to face a mountain of returns that have had to be sorted to the biggest bin of all.....the floor.

In a situation where the library system or consortium is using a central sorter to handle the sorting of all the interlibrary deliveries (like we've recommended for LINCC libraries), the AMH systems in each library should have one sort destination dedicated to items that are going in transit to another library. These items can then be sorted directly into a distribution tote or crate regardless of the destination library because the crate will be taken to the central sort location where staff will induct them onto the sorter and they will be sorted and a manifest created. As described earlier, the manifest makes it possible for the library staff at the receiving library to then check-in all items contained inside the crate by scanning the "license plate" on the crate which kicks off a batch upload of all the barcodes into Symphony. In the U.S., this batch check-in feature was first put into production at King County Library System (Sierra and Evergreen). It is also in use in Salt Lake City Public Library (Polaris).

We've also proposed the idea of putting hold labels on items at the sending library instead of at the receiving library when items are transferred from one location to another to fill a hold request. The reason for this is so that the central sorter can deliver crates to each location for crate-level check-in for all items including items that are sent to fill holds. If the holds are not pre-labeled, a crate containing both holds and returns cannot be easily checked in at the batch level because each item that requires a hold label would have to be identified from those that could simply be reshelved.

So, in order to preserve the benefit of having crate-level check-in for all incoming delivery items, it will be necessary for all holds to be labelled by the sending library. If the integrated library system can be modified as needed, it will be a minor workflow change for staff to generate the hold slip at the time they scan an item to put it into transit.

However, some items are captured for holds when they are returned to a library and checked-in. These items will need to be labeled with the new hold slip and added to the crates that will be sorted on the central sorter. This will allow the crate manifest to be created and receiving libraries will be able to use the crate check-in feature.

If returned items trigger a hold for a destination to which a library presorts, it will be up to that sending library and the receiving library whether the sending library will put on the new hold slip or the receiving library will. As mentioned earlier, it might depend on a number of things including workload, volume of material, which library has an AMH system, etc. But it will be important to work these things out ahead of time.

### Intangible Benefits of Library AMH Systems

Faster turnaround time for patron materials is a key benefit that has many ramifications – some are potentially tangible, but it is hard to find a way to document many of the benefits. For example, some libraries have reported that quicker turnaround time of returns made possible with AMH has resulted in purchasing fewer items. This is because holds queues get shorter and holds ratios will trigger a purchase less frequently. However, this is a difficult savings to document.

The reduction in ergonomic injuries is another hard one to quantify. Most libraries don't have good data on repetitive stress injuries – or simply stress – as it relates to materials handling. Oftentimes the injuries don't put people out of work but bodies are challenged, more braces are worn, and people have a hard time doing some of their daily tasks. Once an AMH system goes in, many libraries report a decrease in all of these signs of ergonomic problems. But it's hard to associate these anecdotal observations with hard data.

Patron satisfaction is increased because of the availability of more material and the faster turnaround times. Also, patrons love having their material checked-in immediately with no delays and without having to stand in line when they do need an item checked-in right away. But again, there isn't a way to put a dollar value on that satisfaction.

### Patron Check-in Benefits of Library AMH Systems

Because we know the number of check-ins and check-outs for each library, we can estimate the staff time saved with a library AMH system. For example, if a library checked-in 250,000 items last year and then implemented an AMH system that provides for 24/7 returns (e.g., with outside walk-up and drive-up returns) and it has enough inside return options to ensure that patrons don't have to stand in line to return items using the AMH system, it is reasonable to expect that 80% of the returns will go through the AMH system. This means staff will only need to manually check-in 50,000 items instead of 250,000 items once AMH is implemented.

Unfortunately, it is difficult to achieve such high self-check-in rates without replacing portable drive-up bookdrops with drive-up self-service returns that feed into the AMH system. The walk-up external returns are equally important, as are the inside returns. So, in most situations where the library is adding AMH to an existing library, self-check-in rates will hover closer to 65% at best and perhaps as low as 35% if no 24/7 returns are made available (so that the only self-service returns that feed into the AMH system would happen during open hours).

### Staff Check-in Benefits of Library AMH Systems

Most library AMH systems provide a mechanism for staff to induct items onto the AMH system for check-in and sorting. These systems support faster and more ergonomic check-in of items than can be accomplished without the AMH system.

It is reasonable to assume that staff can check-in items at the rate of 900-1200 items per hour using a library AMH system. This means that bookdrop and incoming delivery processing will be much faster for libraries with an AMH system (although incoming delivery processing won't be nearly as fast as the crate check-in system described in Recommendation #3 – and that system will benefit all libraries, not just libraries with AMH systems).

### Sorting and Shelving Benefits of Library AMH Systems

Library AMH systems can be configured with totes, crates, bins, trolleys, or special ready-to-shelve book carts. Sorting directly to carts eliminates the step of unloading high-capacity bins to standard bookcarts which are then fine-sorted and shelved. Instead, the items are sorted to the cart and the entire cart can be removed from the sorter, items fine-sorted, and quickly shelved. After removal from the sorter, an empty cart is put in its place so items can continue to be routed to that location. This means that extra carts need to be purchased to ensure there are enough.

Sorting to carts will decrease the time needed to prepare carts for shelving and reduce the non-ergonomic process of unloading bins to bookcarts. However, these carts generally only hold 40-50 items so they reduce the capacity of the sorter over what it can accept when configured with trolleys or bins which can hold 150-250 items each (vendor products vary).

When sizing a library AMH system, it is important to ensure that the capacity of the sorter can handle the volume of returns so sometimes the lower-capacity carts are not the right choice. For example, when the AMH system includes 24/7 returns, the higher-capacity bins will be a better choice than carts. However, some vendors provide AMH systems that support switching between carts and medium-capacity bins. This gives the library the most flexibility in how to use their sorter to improve return-to-shelve time while also ensuring the capacity is adequate during closures. For this reason, we propose this solution as the recommended option in many cases.

Most libraries have certain categories of material that are high priority; for example, new books and holds, and sometimes new DVDs. Sorting out these high priority items, especially to ready-to-shelve carts, is a great way to ensure they get back on the shelves as fast as possible. In the case of holds, library AMH systems can be configured to automatically generate a hold slip near the sort destination to which the holds are sorted so they can be quickly matched with the items as they are returned.

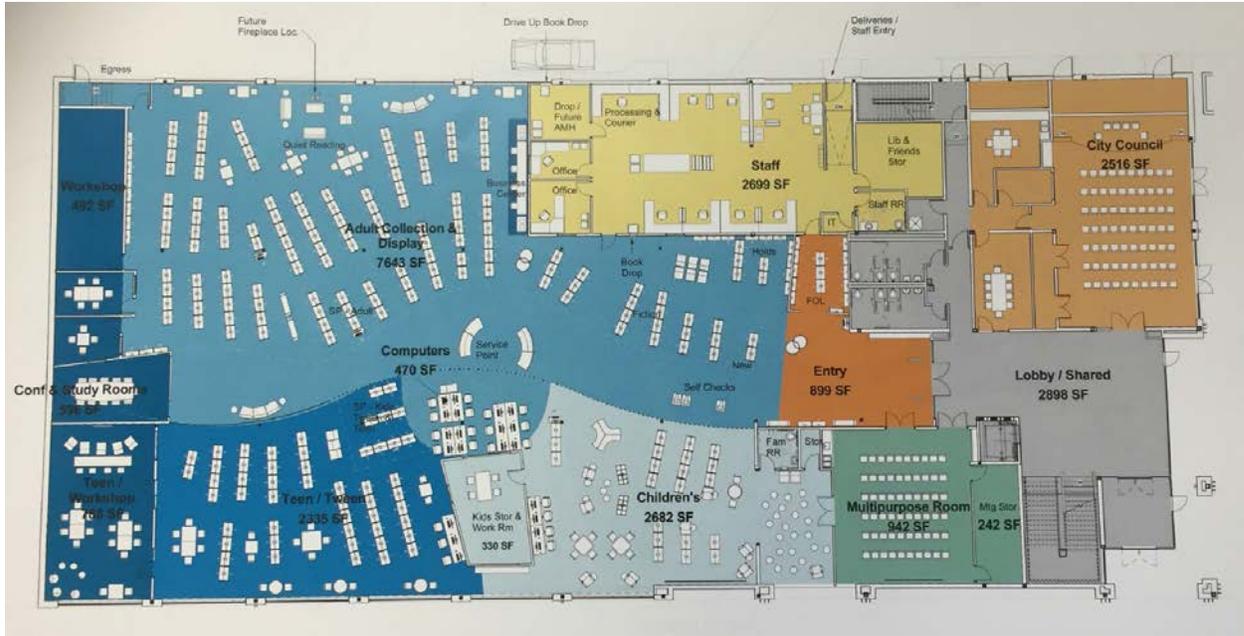
Sometimes a library doesn't have room for enough sort destinations to handle the volume of returns, even when they don't offer 24/7 return options. In this case, the system can be configured with fewer sort destinations but higher-capacity bins instead of carts. At the very least, a library sorter should separate out items that can be shelved immediately (without staff having to open cases or put in slips or otherwise handle the items) from items that do require staff handling. In addition, there is often a third sort destination designated for items that will be routed to another library.

## CANBY PUBLIC LIBRARY

Canby serves a community of 23,500 people in the library’s service area. The city is in the process of designing a new 19,000 square foot library to replace the existing 11,000 square foot library. This is a significant increase in size although it is still a wee bit smaller than is ideal for the service population according to Oregon Library Association (OLA) standards. On average, Oregon libraries provide .85 square feet per person and the new Canby library will be .81 square feet per person. The building will also house the City Council’s meeting room, a multipurpose room and a Friends of the Library bookstore.

Key FY 2014-15 Canby Data	
First time check-outs of physical items	202,639
Self-check-out rate	19.5%
Number of self-check-out units	1
Number of self-check-out units needed	3
Number of staff check-ins	226,592
Number of incoming delivery check-ins for holds	125,150
Average number if crates received daily via delivery	9
Average number of check-ins per hour	85
Average check-ins per day	638
Population served	23,500
FTE	8.35
Library size	11,000 sq ft
Holdings	67,781
	Print: 54, 167
	Media, 13,614

The collection size in the new library will be 70,000 items which is equal to three items per person. The Oregon Library Association standards state that libraries with a service population between 0 and 49,999 people should have between 2-4 items per capita putting Canby, theoretically, in the “excellent” category for collection size.



### New Canby Library Design

The planned layout of the library (as of the diagram above) includes a place for self-service holds pickup to the right, as patrons enter the library. The children's area is located to the left. In the middle of the entrance will be display shelves with new material and three self-check-out units. After the new book display and past the holds pickup shelves is the book return slot which allows for returns to be dropped directly into the circulation workroom.

In the center of the library, next to the public computers, is a single service point. The teen area is located further into the library along one wall and there's a teen workshop space off the teen area. The rest of the library contains the adult collection with a quiet reading area against a far wall and more study rooms along the far wall, and a second workshop space in the far corner.

In addition to the inside bookdrop, there is another drive-up book return planned on the opposite wall (from the interior return) and the return area is enclosed in a small room (presumably for fire containment purposes).

Inside the staff area are two offices plus six standard sized cubicles for workers plus a larger one designated for "processing and courier" which is just outside the drive-up bookdrop return room. There is also a break room area for staff and room for staging crates and carts in the center of the backroom space.

At the time of the site visit, the new director had just begun. At this time, the practice for checking in material from book drop bins involved a multistep process that included the following:

- 1 Unload bookdrop bin contents from each bin into another bin
- 2 Take the bin containing all the returns to the backroom and unload to the counter
- 3 Check discs
- 4 Check-in material at backroom check-in station
- 5 After check-in, sort items onto one of three "loader carts" (Print, Adult Media and Kid's Media)
- 6 Take loader cart to a room located further away from the public shelves and offload to a shelving cart or shelving wall (where items are still roughly sorted)
- 7 Shelves remove carts from this room or offload items from the shelves to make their own shelving carts

As of this report, Steps 6 and 7 above have been eliminated. The loader carts are no longer transferred to another location but remain in the circulation room where volunteers and staff can easily access them to fine-sort and shelve. The backlog has now been eliminated with these changes.

### CANBY RECOMMENDATION #1

#### Combine drive-up bookdrop room and processing/courier space and 3-bin AMH with staff induction station

The current plan for an enclosed book drop room with a drive-up bookdrop on the backside of the library would be more useful without the door separating the book return room from the processing/courier work area just outside of that room. A small AMH system placed off that drive-up return would provide for 24-hour self-service check-in and sorting plus give staff a way to use the sorter for checking in items from the other book returns that are not connected to the sorter.

A small 3-bin sorter with an external patron return and staff induction would run approximately \$125,000.

State-of-the-art AMH systems can be configured with fire suppression capability (if necessary). They can also be configured to reject material that is not recognized as a library item. So, instead of enclosing the entire room for fire suppression purposes, the fire suppression and/or control over what can be accepted by the system is built into the AMH system. It is preferable to leave plenty of room around an AMH system so staff can easily move material in and out of the room, stage material where it makes sense, and not be constrained by a little room and door that serves as a bottleneck without providing any other benefit.

### CANBY RECOMMENDATION #2

#### Reduce planned collection size to no more than 57,000

Despite the fact that a collection size of 70,000 would put Canby in the “excellent” category according to the OLA standards, this number of items is a lot of material to house in a modern library where more and more activities are occurring that aren’t necessarily focused on books and circulation of materials.

A closer look at the standard is in order. The OLA standard offers only two categories when making recommendations for collection size. Either a library has a service population of 50,000 and above, or a service population less than 50,000. Canby’s service population is half the size of the maximum in this category (23,500). The standard states that libraries should have at least 5000 items (regardless of size) and after that the ratio ranges from 2-4 items per person. In other words, Canby would be within the range specified by the standards with 57,000 items in the collection.

At 57,000 items, the new library could eliminate several of the shelving units currently planned for the new library. With a single service point, sight lines are critical. Removing shelves or reducing the height of shelves is the only way that a single service point will enable staff to keep an eye on activities in all corners of the library.

Even at 57,000 items, the number of items for a library of this size is high by standards elsewhere in the country. More and more libraries are choosing to open up more space for other activities. With fewer shelves, the library could expand the quiet reading space and study room areas, add some additional meeting room spaces or provide a conference room big enough to hold more than just the conference room table (e.g., add projector, room for tables around the conference table for drinks and supplies, etc.).

### CANBY RECOMMENDATION #3

#### Miscellaneous Comments on Proposed Library Design

Although it might be too late, there are some issues with the current library design that should be noted in case they can be addressed and also to help inform others that might be moving forward someday with a new building design. For the purposes of materials handling workflow (mostly), the following suggestions apply to the building design (as of the version noted above):

The entrance of the library would be better located on the corner where the teen workshop is planned. The busiest part of downtown is at that end of the library so more people will likely be approaching the library from that end of town and it would be more convenient. Also, if the entrance was there, a materials return option could be available at the entrance both inside the library and outside (for 24/7 access). Both returns could be configured to feed directly into a staff workroom if that was also located at that end of the library and the drive-up return could be omitted. This would take away the drive-up return option but still provide for 24/7 access (perhaps with a dedicated 5-minute parking spot on the street). Both the

inside and 24/7 returns could feed directly into one AMH system and still be very convenient for patrons while more fully leveraging the technology for the lowest cost.

Swap inside bookdrop return spot with holds pick up area. Having the patron return so far into the library, as planned, is not ideal. Patrons choosing to browse the new items in the display area or pick up their holds will still have their arms full while they browse. It is likely that having the inside return this deep into the library will result in demands for an outside portable return for patron convenience, which is the least convenient kind of return possible from the staff point of view.

Whenever possible, keep the returns coming into the same place. With the current layout, there is no way to connect up returns to one AMH system for sorting without a long conveyance run and that isn't practical for this library.

Add staff at entrance to help with self-check-out and monitor gates. Having the only service point in the center of the library provides many challenges. As mentioned above, it will be crucial to have the shelves low enough so staff can see all areas of the library from that service point. But even with short shelves, staff won't be able to address patrons that set off the security gates as they leave the library. By placing the only service point so far from the gates, the layout renders the gates much less effective – possibly totally ineffective because people will just ignore them. The best workaround is to have a person stationed at a small concierge or welcome style perch who can welcome people and also intercept those that set off the alarms.

## ESTACADA PUBLIC LIBRARY

The Estacada Public Library is a beautiful library nestled in a wooded, rural area complete with a pond and plenty of trees. The layout of the public space is open with high ceilings and low shelves with lots of material on display, and the map at the entrance makes it very easy to orient oneself.

Key FY 2014-15 Estacada Data	
First time check-outs of physical items	142,365
Self-check-out rate	34.7%
Number of self-check-out units	2
Number of self-check-out units needed	2
Number of staff check-ins	160,298
Number of incoming delivery check-ins for holds	85,129
Average number of crates received daily via delivery	7
Average number of check-ins per hour	56
Average check-ins per day	452
Population served	19,646
FTE	7.7
Library size	12,060 sq ft
Holdings	49,482
	Print: 34,407
	Media, 15,075



Map of Library



View from large windows along one wall



Open-spaces and low shelves in center and high ceiling make for a very appealing space



Plenty of material on display

There is one outside 24/7 book return which deposits items into the circulation work room. All four returns drop items into book bins that are located inside the circulation workroom.



Outside 24/7 return



Three additional return slots in vestibule



Three returns from vestibule in foreground and black bookdrop bin in distance from the outside book return

The Library provides for self-service holds pick-up of books but media holds are kept behind the service desk. There are two self-check-out units located nearby and these are used 34.7% of the time.

There are typically two circulation staff working with one at the service desk and the other doing other circulation tasks who is available to help at the desk if necessary.

The staff work area is divided up such that there are no real offices for staff (including the director) and even the cubicles are extremely small.

There is plenty of room in the main circulation area for checking in items and sorting them to crates, as well as for receiving material. There is also a nice large break room, a conference room (for staff and the public), and a supply room. One big counter and work area is also dedicated to technical services with a lot of the space used by mending equipment and supplies.



Main circulation area with little cubicles along front wall



Large area in backroom dedicate to mending and technical services

The library currently has no security gates and is not considering installing security gates as part of its RFID implementation.

## ESTACADA RECOMMENDATION #1

### Replace three inside book returns with two self-service returns attached to 3-bin sorter.

Even though the number of returns to Estacada are not high, it would be fruitful to plan to replace the inside book return slots with a self-service return and make the vestibule available 24-hours a day. This way patrons could return material 24/7 and be protected from weather while doing so. In such a scenario, the outside book return slot should get locked or removed to ensure patrons all use the 24/7 returns inside the vestibule. It would also require the library to lock the bathrooms located in the vestibule at night. This will further leverage the investment without much inconvenience to patrons since the inside returns are very close to the outside return.

With just a small, three-bin sorter, the Library would be able to handle the volume of returns even during closures. Three bins would hold 500-750 items depending on the type of bins used – either of which would be adequate for the average number of returns per day of 452.

The three sort destinations would enable the library to receive and check-in items that go into transit to another location directly to a crate (at least during open hours) so no handling would be required (except for transit items that are holds). Holds and other material requiring staff handling would go to one bin and all other items that could be immediately reshelfed would go to the third bin.

In an RFID environment, the additional benefit of having an AMH system (even a small one like the one recommended here) is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return with RFID will address that.

Finally, having a printer located on the sorter for easily matching hold slips to returns would also save staff time and reduce the amount of scanning individual items that is required.

The existing returns have fabric covering the returns on the staff side because of the cold air that comes in from the vestibule. By replacing the open slots with self-service returns configured with access doors, the backroom would be better protected from the blasts of cold air that they currently encounter. It may be necessary to use returns designed for external use to tackle this problem but it would be an additional benefit and provide for some additional savings in heating costs.

The cost of a 3-bin sorter configured with three (3) high-capacity bins (which can also be converted to a crate during the day to eliminate any handling of transits), configured with two (2) internal patron returns would be approximately \$115,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

Depending on the rate of use, such a system could save 300-600 staff hours a year in check-in time alone, and allow the staff at the circulation desk to focus their energies on patrons that need more assistance. It would also offer the benefit of reducing the number of incomplete sets being returned and reduce handling of media for staff.

## ESTACADA RECOMMENDATION #2

### Reconfigure backroom spaces and create office for director and larger cubicles for key staff

Although the overall size of the staff area is adequate, the way the spaces are divvied up is not appropriate for the needs of the library staff. Most notable is the absence of an office for the library director. The director supervises all staff and handles personnel matters and must have the ability to meet with staff privately. In the current layout, the only option for having a private meeting is the conference room (which is technically for the public) but even that isn't completely private. There are windows on the staff side as well as the public side of the conference room making it private only in the sense that people can't hear what is being said. Not an ideal scenario for dealing with delicate matters that can arise with staff having personal issues or which require special attention from their supervisor.

The current director's space is a tiny cubicle. In addition to the lack of privacy, it is also inadequate in terms of size. There isn't room for two people to sit inside the cubicle. A director's office should have room for the director to work privately, for the director to have private consultations with staff, and ideally, there should be enough room for the director to have private meetings with 3-4 people at a time so there should be enough space for a small conference room or at least a small table.

The small cubicles available for professional staff are also inadequate. They are overflowing with material and the spaces are awkward to move in and out of – partly because they are so small and also because they have been defined by large cabinets that serve as separators between desks and the open back room area.

The biggest allocation of space in the back room is for the technical services and circulation staff. The layout of the circulation work areas is great. The spaces are well-defined for their purposes, compact but not cramped, and staff have established excellent workflows. However, beyond the circulation areas, there are areas that could be better organized.

Rethinking how the backroom spaces are allocated should be a high priority. It is hard to imagine how professional staff, especially the library director, can be effective in these spaces. Ideally, the Library would hire a space planner to redesign the backroom taking all of the above factors into account along with other Library priorities of which we might not be aware because of the limited scope of this engagement.

We offer the following ideas for the Library to consider:

- Eliminate the outside bookdrop and convert the corner of the backroom to the library director's office. It should be long enough to include the window and provide enough space for a desk as well as a work table for meeting with 2-3 people. It would have to be enclosed on the two sides to provide the necessary privacy that someone supervising a staff of people requires.
- Expand size of all cubicles for other librarians and define spaces with more space-efficient walls. The current cabinets that are used to create a wall between the desks and the rest of the backroom are not effective. They don't provide the kind of storage needed and they take up 4-5 square feet of floor space that could be put to better use inside the cubicles. By widening each cubicle and changing out the cabinets for walls, it should be possible to provide for cubicles that are more adequate for the librarians to use during their off-desk hours.



Space that could be converted to Library Director's office including space starting at the door (at the right) to the end of window (to the left). Recommend eliminating outside bookdrop.



Backroom with cabinets used to separate work desks for professional staff from the rest of the backroom area

- Create a shared work area using half of the technical services/mending space for non-professional staff to use for making phone calls, checking email and doing other necessary computer work.

### ESTACADA RECOMMENDATION #3

#### Move all holds out into public shelves for self-service pick-up

Keeping all items out for self-service pick-up will increase self-check rates which is now only 34.7%. The current number of self-check-units is adequate for the circulation volume but the self-check rate could definitely be improved. This can happen with RFID simply because it is so much easier to use. However, if patrons have to go to the staffed service point to get their material, they won't go back to the self-check to complete the transaction. In order to reduce the numbers of check-ins and check-outs staff are doing so they can spend their time delivering other services to patrons requires an easy to use, fast, and efficient self-service system for check-in and check-in including holds pickup.

However, because Estacada is not planning to install security gates, they will have no way to ensure that items are checked out and while this doesn't pose a high risk for this library for most items, it is a concern for certain media and especially popular media (such as movie DVDs that are on hold). Therefore, the only way they will be able to move all holds out onto the public shelves is if they use locking cases for high risk media items.

To the extent possible, it is recommended that items placed on hold be available for self-service pick-up but this always has to be balanced against security concerns and it might not be possible at Estacada as long as they do not use security gates.

## GLADSTONE PUBLIC LIBRARY

The Gladstone Public Library is in dire need of a new physical structure. It provides services to 11,600 Gladstone residents. As a recent article in the Oregonian stated:

“...the existing library in Gladstone is bedeviled by a leaking roof, mold and inadequate parking. There are even mushrooms sprouting from rotting window casings near the main entrance. The county's decision to terminate an agreement that could have provided the city with the means to replace the building, though, has led to legal threats and escalated tensions.”

One hopes that these issues are soon resolved given the condition that staff and patrons are enduring at this location.

Key FY 2014-15 Gladstone Data	
First time check-outs of physical items	167,021
Self-check-out rate	23.3%
Number of self-check-out units	2
Number of self-check-out units needed	2
Number of staff check-ins	203,553
Number of incoming delivery check-ins for holds	124,085
Average number of crates received daily via delivery	9
Average number of check-ins per hour	69
Average check-ins per day	573
Population served	11,600
FTE	7.88
Library size	5,100 sq ft
Holdings	44,161
	Print: 30,258
	Media, 13,903

Despite the condition of the physical structure, the staff at Gladstone have managed to create some very nice options for patrons.



Library entrance



Children's area of the library

The children's area upstairs and the computer lab downstairs and the NF collection are appealing and well-used environments. However, the center of the library is crowded with material in very tall shelves and a set of tables in the center with a confusing array of public computers, printers, PC reservation system, and library catalog.



Table covered with several computers serving different purposes and printer



Holds are available for self-service pick-up near the public computers and a self-check-out machine. Self-check-out use is 23.3%.



View from children's part of library overlooking main entrance. Hold shelf to the left after entering.



Self-check-out on table in front of holds (behind the table with red cover)

The Library has an outside bookdrop that deposits items into the small but well-organized circulation area behind the circulation desk. There is another return slot inside the entrance. Some patrons also hand returns to staff at the counter as they enter.



Outside bookdrop return with bin inside circulation workroom



Bin under circulation work counter from return inside entrance

There is a counter around three sides of the room so staff have plenty of useful counter space. Crates are organized on slide-out, slanted shelves for easily sorting items for other libraries into crates.



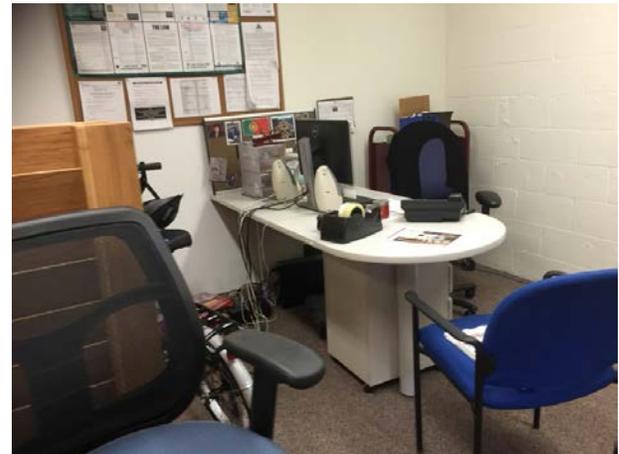
Area behind the circulation desk is well organized and easy to use

Once away from the circulation desk, the staff spaces become increasingly less manageable. Adjacent to the circulation area is a narrow space with a couple check-in stations and a desk used by the library manager and probably by other staff when they need to make a phone call. It is an open space so it isn't suitable for having private conversations.

At the far end of the room is a counter with a microwave and refrigerator so it is also acting as the breakroom.



Two check-in stations along the left wall with break room



Desk for manager with no privacy

In the basement of the library is where the professional staff have desks. This is an unfinished basement with wires dangling from the ceiling and a distinctly damp feel.



Unfinished basement provides only work area for professional staff

In addition to desks, there are numerous portable shelving units for storage along with some shelves along the wall. The walls are concrete and the floor partially covered with a thin vinyl material. The one window in the space is blocked by a metal shed. The emergency exit is composed of a baseball bat to break the window and a makeshift ladder.



Networking and telecommunications equipment exposed in circulation area



Window with emergency exit ladder

## GLADSTONE RECOMMENDATION #1

### Reduce size of collection

One of the challenges for small libraries like Gladstone is to resist the urge to be all things to all people. Given the size and layout and condition of the building, it is clear that the Library has to make some choices about what services it can deliver well and what services it should discontinue in order to do what it can do at a higher quality. Trying to do everything can result in mediocre to poor services on many different levels.

It would be best if the current building could be replaced. In addition to the mold and disrepair, the library is small and isn't ideal for browsing. It is especially hard for people to see what is available on the shelves on main floor where the shelves are very high.

Gladstone patrons have access to a larger collection than what is physically available on the Library shelves. Patrons can request items in the LINCC catalog from any other LINCC library and have them ready for pickup at Gladstone in a couple days. In other words, having such a large browsing collection might not be so important.

By reducing the collection size dramatically, and relying on other LINCC libraries to provide titles that cannot be kept onsite, the spaces could be used much more effectively and comfortably.

The current collection size is approximately 44,161 items. With a service population of 11,600 this is well over the Oregon Library Association's (OLA) recommended minimum holding size for a library of Gladstone's size. Reducing the collection by half would still provide for holdings in the range of those recommended by OLA which is at least 2 items per person served, or 23,200 items.

Once the collection size is reduced, some of the spaces could be re-allocated and the height of the shelves could be reduced to provide for a more open space and shelves that are more comfortable to browse.

## GLADSTONE RECOMMENDATION #2

### Re-allocate spaces

The working space in the basement isn't safe for people to work in – between the open walls and dangling wires and the moisture - it certainly isn't conducive to doing the work that professional staff need to do. However, it could be relatively easily converted to a comfortable breakroom. The recommendation is that the downstairs be converted to primarily storage with a nice breakroom.

For the professional staff, the recommendation is to establish proper work areas in the area that is now housing the NF collection. This would require reducing the NF collection by at least half, which seems reasonable, especially in light of the unsafe conditions for staff working in the basement.

Depending on how much space can be freed up in the NF area, it may be possible to provide a private office for the library manager in that space. Otherwise, the recommendation is to create an office in the space next to the circulation area. It is important for managers who supervise people to have a private office so providing for a private cubicle in one of these two areas is strongly recommended.

We also recommend that the telecommunication closet be enclosed and properly ventilated.

The table in the center of the library, on the main floor, requires some rework as well. It currently contains a printer for the public, a PC reservation computer, a self-check-out computer and a few public computers for adult use (the Teen public computers are in a special room at a lower level beneath the NF area). Creating more space for adults to use the computers is another reason for reducing the collection.

It would be nicer for patrons to have this area opened up so it was easier to use the computers and printers without interfering with people who are in that space to pick-up holds and check-out. One way to accomplish this would be to eliminate one or two of the book shelves in the center of the library completely, along with two to three ranges of shelves against the far wall. This area could then be setup with four workstations plus maybe a couple other places for people to work who come in with laptops and the printer and PC reservation computer could be located nearby but away from the holds shelves on the opposite wall.



Tall shelves in center of library that could be eliminated to make room for public computers



Reference staff available but easy to miss

The current reference desk is lost amongst the confusion in the center of the library. By separating these two areas, it would become more obvious that there is a person onsite who is available to help – not just someone else competing for a computer.

Supporting these changes with a wayfinding strategy is also recommended.

### GLADSTONE RECOMMENDATION #3

Replace outside book returns with one self-service return attached to 3-bin sorter with staff induction.

Even though the number of returns to Gladstone are not high, the outside book return area is often very busy. According to couriers, material has sometimes overflowed during closures and must be picked up before the couriers can bring in the day's deliveries. It would be fruitful to plan to replace the outside book return slot with a self-service return so that items could be returned by patrons 24/7 and get checked in immediately and eliminate the overflow problems.

With just a small, three-bin sorter, the library would be able to handle the volume of returns even during closures. Three bins would hold 500-750 items depending on the type of bins used – either of which would be adequate for the average number of returns per day of 192.

The three sort destinations would enable the library to receive and check-in items that go into transit to another location directly to a crate so no handling would be required (except for transit items that are holds). Holds and other material requiring staff handling would go to one bin and all other items that could be immediately reshelved would go to the third bin.

In an RFID environment, the additional benefit of having an AMH system (even a small one like the one recommended here) is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return with RFID will address that.

Finally, having a printer located on the sorter for easily matching hold slips to returns would also save staff time and reduce the amount of scanning individual items that is required.

The cost of a 3-bin sorter configured with three (3) high-capacity bins (which can also be converted to a crate during the day to eliminate any handling of transits), configured with one (1) external patron return and a staff induction station would cost approximately \$125,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

Depending on the rate of use, such a system could save 500-800 staff hours a year in staff check-in time alone, and allow the staff at the circulation desk to focus their energies on patrons that need more assistance. It would also offer the benefit of reducing the number of incomplete sets being returned and reduce handling of media for staff.

## HOODLAND PUBLIC LIBRARY

Hoodland is a lovely, remodeled 1909 square foot branch of the Sandy Library located in Welches. Despite its diminutive footprint, it manages to deliver a browsing collection, a small children’s nook, self-service holds pickup, a seating area for four, a laptop counter, and a meeting room complete with plenty of tables, storage and a sink.

Key FY 2014-15 Hoodland Data	
First time check-outs of physical items	61,273
Self-check-out rate	0%
Number of self-check-out units	1
Number of self-check-out units needed	1
Number of staff check-ins	68,037
Number of incoming delivery check-ins for holds	37,781
Average number of crates received daily via delivery	4
Average number of check-ins per hour	30
Average check-ins per day	192
Population served	5,000
FTE	2.5
Library size	1,750 sq ft
Holdings	16,650
	Print: 12,178
	Media, 4,472



Seating area and room for browsing



Low shelves and laptop counter make it a pleasant place to hang-out

There is one small service desk with a book return slot on the front and a self-check machine on the countertop. There is also a portable, drive-up book return outside in the parking lot. At the time of the site visit, the self-check-unit had just been installed so no statistics about self-check rate are available. The staff area is extremely small but does provide staff a private restroom, sink and counter, a desk, and some storage.

The library has no security gates nor any plans to add them at this time.



Circulation desk with self-check-out between two staff stations



Children's nook

## HOODLAND RECOMMENDATION #1

### Place self-check unit on end of service desk instead of between two staffed service points

One minor suggestion is to move the self-check-out unit to the end of the desk (the lower, ADA end of the desk) to provide for more counter space for self-check users that isn't directly in front of staff. As it is set-up now the self-check sits on a high counter (which isn't ideal because it puts the touch screen up higher than is comfortable for most people) and it is right next to the workstation that is generally used by staff. Therefore, staff and the public using the self-check are effectively sharing the counter space and work nose-to-nose.

A better approach is to separate the self-check from the primary staff workstation so people feel comfortable setting things on the counter while they use the self-check. If they need help, staff are still nearby but they aren't hovering over them.

It may be possible to eliminate one staff workstation instead of moving it. That way, it would make staff more visually accessible to patrons.

## HAPPY VALLEY PUBLIC LIBRARY

Happy Valley is a bright, tidy, and inviting library with two floors and an open floor plan including an open staircase to the second floor. The children’s department and administrative offices are upstairs. It provides an excellent example of a library with an effective wayfinding strategy.

Key FY 2014-15 Happy Valley Data	
First time check-outs of physical items	509,994
Self-check-out rate	54.8%
Number of self-check-out units	3
Number of self-check-out units needed	4
Number of staff check-ins	558,526
Number of incoming delivery check-ins for holds	238,016
Average number of crates received daily via delivery	17
Average number of check-ins per hour	199
Average check-ins per day	1,573
Population served	52,520
FTE	14.65
Library size	18,300 sq ft
Holdings	103,816
	Print: 84,504
	Media, 19,312

There is plenty of room for all the material as well as plenty of room for people. Signage is simple, bold and effective. The main floor houses a large percentage of the collection in a designated area akin to “stacks” and this allows the rest of the library to be open with only short shelves of new material for browsing.

The library provides three self-check-out units around the corner from the staffed circulation desk. The self-checks are clearly signed and located near the self-service holds pick-up shelves which are also clearly signed.



Each self-check unit provides for plenty of room for patrons to place personal items as well as stacks of material so they can check-out easily. Patrons are also permitted to unlock their own media cases at the self-check units.



Convenient shelves for making self-check-out easy.  
Media unlockers are available for patron use (with staff located nearby to monitor and assist as needed)

There is a fairly large area dedicated to public computers and the reference staff have a service point nearby under a big sign that says “Ask Here.”



Inside returns drop into circulation workroom



Second outside return at end of block (in addition to 24/7 return at front of library)

There are four bookdrops. One is a standard bookdrop on the outside of the library at the entrance. There's another outside bookdrop slot at the far end of the library (from the entrance) for the convenience of patrons parking further down the street. There are also two internal return slots to the right of the circulation desk.

Both outside bookdrops have standard bins in a closet which staff empty throughout the day and bring into the circulation workroom. The inside returns deposit items directly into the workroom.



Counter with check-in station  
Both images: Sorting carts staged in center of room



Counter with check-in station next to bookdrop bin (background)

The circulation workroom is approximately 35'x 20' and is well organized with working counters along two walls. All items are checked in at two workstations (one on each counter). The inside bookdrop bin is right next to one of the check-in stations on this counter. Along another wall is staging for crates for outgoing material. At the far end are a few ranges of shelves for sorting material after check-in.

The center of the circulation room is used for sorting carts during check-in. Items are rough sorted to the carts (or to the shelving at the rear of the room). Ready-to-shelve carts are staged near the door to the public part of the library.



Space along left wall is used for staging and sorting to crates



Ready-to-shelve carts staged and awaiting shelvers

The library has no security gates and doesn't plan to install any as part of the RFID implementation. There is also no intention to incorporate automated materials handling (e.g., self-service check-in and sorting).

## HAPPY VALLEY RECOMMENDATION #1

### Consider inside self-service check-in with sorter to further streamline check-in process for staff

The current operation at Happy Valley is able to keep up with their circulation volume and shelving. There is no backlog. However, library staff checked-in 558,526 items last year. This number could be dramatically reduced with a relatively inexpensive sorter with one or two returns for patrons to use inside the library only. Internal returns are less expensive than external returns so the investment would be as minimal as possible yet provide some meaningful advantages.

One advantage of having a small sorter in the circulation workroom is that it could be used to verify that the right discs are inside the right cases once the entire collection has been converted to RFID. So, not only would staff be able to discontinue some percentage of check-ins entirely (because of some percentage of patrons using the internal self-service return) but they'd also be able to use the staff induction to more ergonomically check-in items and allow the system to check media. Staff would no longer have to open most movie DVDs and possibly other types of media.

Another benefit is that the self-service return would prevent patrons from returning incomplete sets causing them to make extra trips back and forth to remedy their mistake.

In addition, all items returned to Happy Valley that need to be transferred to other LINCC libraries would not have to be handled by staff at all. One sort destination would be configured for transiting items that will be sorted at the LINCC sorter. The library would no longer need the long staging area for crates along the wall, nor would staff have to sort into crates. Assuming the new workflow for holds is implemented as recommended in Recommendation #2, staff would still need to place slips on transit holds but they wouldn't have to sort them.

The recommendation for Happy Valley would be to add a 7-bin automated materials handling system (AMH) that allows patrons to return material inside the library during open hours, and which has a staff induction so that any other returned items can be checked-in and sorted by the AMH system.

The cost of a 7-bin system with one staff induction and one internal return for patrons is estimated at \$140,000 and would require approximately 12' x 12' of the available space in the workroom. The sorting carts in the center of the room would no longer be needed so there would be plenty of space for such a system and still leave the far half of the room as is. Even a 5-bin sorter would provide most of the above benefits but wouldn't serve the library quite as well in terms of sorting material (Cost estimate \$120,000 and space requirement only 10' long by 12' wide). Because of the layout of the library, a 7-bin sorter is recommended for separating holds (with automatic printing of hold slips), transits, children's, teen/YA, browsing collection, NF, and Adult Fiction.

Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

## LAKE OSWEGO PUBLIC LIBRARY

Lake Oswego is a very popular and attractive library nestled into the hills. It is the busiest library in LINCC. With self-check use at 3.9%, FY 2014-15 staff checked out 691,701 items and checked in 778,663. In addition, staff checked in 274,856 items that came in via delivery to fill holds (receiving approximately 21 crates per day).

Key FY 2014-15 Lake Oswego Data	
First time check-outs of physical items	719,772
Self-check-out rate	3.9%
Number of self-check-out units	1
Number of self-check-out units needed	6
Number of staff check-ins	778,663
Number of incoming delivery check-ins for holds	274,856
Average number of crates received daily via delivery	21
Average number of check-ins per hour	230
Average check-ins per day	2,193
Population served	37,421
FTE	32.03
Library size	27,100 sq ft
Holdings	201,591
	Print: 153,817
	Media, 47,774

The library has two book drops on the front of the building and one in the entry which feeds directly into the downstairs workroom. The library has three floors including the children's library at the lowest level. Staff and volunteers pull items out of the bookdrop bins and sort them on a table in the workroom. As items are sorted, they are transferred to carts and rough sorted for shelving. Each ready-to-shelve cart is labeled with the color-coded, laminated tag showing the day of the week it was set aside for shelve.

There is one very old 3M self-check machine that is rarely used (and ironically labeled "Express Checkout.")



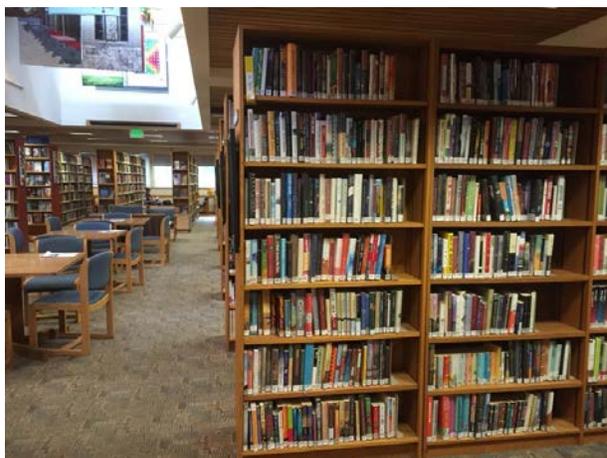
Lake Oswego's legacy 3M Self Check-out is used for 3.9% of check-outs

The entrance is spacious and attractive with displays to the left and a large, semi-circle shaped circulation desk to the right. The elevator and stairs to the upper floor and down to the children's library are viewable as you enter.

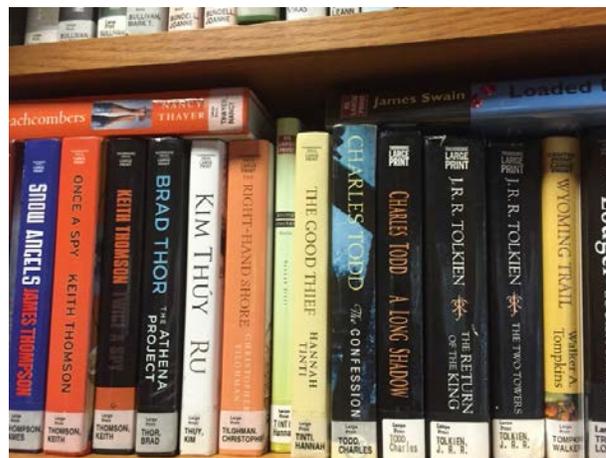
The circulation desk is situated between two doors on either side for moving in and out of the workroom. All three staff stations are not used most of the time. Usually only one or two people are needed at the desk. However, two are ideal to ensure that someone is always at the desk even when one of them is going into the backroom to collect holds that are shelved there (instead of out on the public floor for self-service pickup).

The Library makes extensive use of volunteers. The exact number of regularly working volunteers is hard to determine but there were name tags for 150-200 volunteers on a bulletin board in the backroom. Coordinating this many volunteers requires a lot of time and patience. Each volunteer must be trained and their work monitored and the scheduling can be a nightmare since many volunteers only work a few hours a week. The Library does use a software program to assist with scheduling and coordinating volunteers, but there is still a substantial work effort involved in maintaining a volunteer crew of this size.

The shelves throughout the library are tall. The tall shelves and the shape of the library makes it very difficult to monitor everything going on in the library unless staff roam around. Sight lines from the circulation desk and also from the nearby Reference desk are very limited on the main floor. Sight lines are better upstairs and downstairs.



Poor sight lines from circulation desk due to high shelves



Overfilled Lake Oswego shelves

In addition to being tall, the shelves are extremely full. Some shelves are so full that items were found stacked on top of other items. With such tall, full shelves, it is likely a very challenging proposition to do any shelving. Staff and volunteers probably have to spend an excessive amount of time moving stock in order to add items.

## LAKE OSWEGO RECOMMENDATION #1

### 15-bin AMH with two (2) external returns, one (1) internal return, and one (1) staff induction

Given the high number of returns and the incoming delivery check-ins done by staff and volunteers, Lake Oswego would benefit greatly from an automated material handling system that would support self-service check-in for patrons from inside and outside the library and faster check-ins for staff (and volunteers). The recommended configuration includes a staff induction to handle returns from the book drops at the library as well as other locations in the city. The system should also be configured with two outside, walk-up returns to support returns 24/7, plus one internal return. This would provide three patron return points during open hours. The AMH system should have 15 sort destinations to support the Library's workflows during open hours as well as over holiday closures.

Based on the number of days the library was open in FY2014-15 and the number of returns received, the average number of returns per day is 2,193. The sorter, configured as recommended below, will be able to hold 2,875 items which is probably adequate for closures since it is unlikely that as many items are returned during closures as are received on open days (but this should be verified).

In addition to capacity considerations, the sorter also needs enough sort destinations to sort items at a granular enough level that it will support a faster return-to-shelve process. Fine-tuning this process always takes time but with 15 sort destinations, the library will have a lot of flexibility.

At least two of the sort destinations should be configured for crates so that items going into transit to fill holds at other locations can be routed directly to crates. If two crates are used, transit holds (need to go to another library to fill a hold request) could be separated from transit returns (need to go to another library but not to fill a hold). The crate containing transit holds should have a hold slip printer within easy reach so that staff can easily attach the slips as items are routed there (at least during the day). As each crate is filled, it would be replaced by another empty one. No further handling would be required.

Another sort destination should be dedicated for Lake Oswego holds. This sort location should be next to the transit holds crate, near the hold slip printer.

Each of the sort destinations designed for a crate can also be converted for use with high-capacity bins (250 items).

One sort destination, typically at the end of the sorter, would be configured with a high-capacity bin. This so-called "Exceptions Bin" is where overflow items would go (and possibly other items that the library designates for this bin).

Another six (6) sort destinations can be configured with medium-capacity bins during closures and ready-to-shelve carts during the day (to expedite the return to shelf process). Medium-capacity bins can hold 125 items. The carts have a capacity of 40-50 items each. Switching between the medium-capacity bins and the carts provides the best combination of ergonomic support for reshelving by day and high-capacity sorting during closures.

The remaining five (5) sort destinations can be configured with high-capacity bins to provide maximum capacity and also to use for collecting items that the library may choose to run through the sorter again to carts. For example, two high capacity bins could be designated for children's material. When the two bins get close to being full (or perhaps every couple of hours), the sort plan can be changed and the material would be more granularly sorted to some of the ready-to-shelve carts for quick shelving to areas in the children's library. After the two bins had been inducted (requiring less than 20 minutes) and the carts taken away, the sort plan could be switched back to normal operation.

In an RFID environment, a key benefit of having an AMH system is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return in an RFID environment will address that.

The cost of a 15-bin sorter configured with nine (9) high-capacity bins and six (6) destinations that would support medium-capacity bins or carts, plus nine (9) carts and six (6) medium-capacity bins, two (2) external returns, one (1) internal patron return and one (1) staff induction is estimated at \$332,500. If 80% use of the self-check-in system could be achieved, it would save 1730 hours per year in staff time. Alternatively, by eliminating the carts and medium-capacity bins, and going with all high-capacity bins (which can also sort to crates), the cost of the system would be closer to \$280,000 but wouldn't have the ergonomic benefits of sorting the carts.

The time spent on materials handling tasks could be reduced by as much as two thirds with the recommended AMH system. Assuming 75% of check-ins will go through the new system, staff will only have to check-in 195,000 items per year instead of over 778,000. Any items that do need to be checked in by staff will be faster on the AMH system (staff can induct items at the rate of 900-1200 items per hour) and the return-to-shelf process will be faster and more ergonomic. And returns that need to go in transit to another library won't have to be handled at all.

At least one (and possibly two) people would need to work in the backroom in order to operate the AMH system during open hours if the ready-to-shelve carts are used. With a 40-50 item capacity, they need to be swapped out more frequently than high-capacity bins but the benefit is that these items can be taken directly to the shelves and interfiled without needing to unload each item and sort them to bookcarts. A sorter configured with all high-capacity bins would not require such close monitoring so one staff person could split their time between tasks in their backroom and other materials handling tasks in other areas of the library.

In summary, depending on the desire to sort to carts and the need for high-capacity bins, the capacity of the 15-bin sorter will be somewhere between 2,875 (as recommended) or 3,750 (100% bins that need to be unloaded for shelving) and cost between \$280,000 and \$332,500. Cost estimates include shipping and training and first year maintenance but not taxes. The library should assume 10% of the purchase cost per year in maintenance after the first year.

## LAKE OSWEGO RECOMMENDATION #2

### Add five new self-check-out kiosks and retire existing legacy 3M unit

The current self-check-out unit at the Library is 13 years old and should be retired. Self-check technology has come a long way since 3M debuted that product in 2003. The new self-service kiosks can be configured to do check-in, check-out, renewal, manage holds, and pay fines and fees. Many vendors are providing interfaces to the library events calendar, providing recommendations based on items being checked out, and linking recommendations to available e-books as well. A new tabletop-style self-check-out unit costs approximately \$8,000. A free standing kiosk runs about \$10,000 (both including fines and fees payment by credit/debit card options).

Based on the circulation volume and the layout of the library, five (5) new self-checks are recommended: one upstairs, one downstairs in the Children's area, and three near the entrance. State-of-the-art self-checks can be themed so the one in the Children's Area could be more compelling for children, although children love using the self-checks even when they don't have a whimsical theme.

If the library could boost their self-check-rate to 85%, and assuming each check-out takes 20 seconds, the Library could save 3,243 staff hours per year. Considering that check-outs involve interactions with patrons beyond the few seconds it takes to scan the item and check it out, 20 seconds per check-out is a conservative estimate.

## LAKE OSWEGO RECOMMENDATION #3

### Move holds out of backroom for self-service pick-up

If the library hopes to achieve self-check-out rates of 85% or more, it is critical to move the holds out onto the public floor for self-service pick-up.

The current workflow calls for keeping holds in the back room making it necessary for circulation staff to retrieve these items from the back room Hold Shelves when people come to the desk and request them.

It takes a staff person at least 45 seconds to leave the desk, go to the backroom, find the requested items, and bring them out for the patron. Since the patron is at the desk already, it only makes sense that they would then check-out the items at the circulation desk instead of at the nearby self-check-out machine. Therefore, it will be nearly impossible to achieve high rates of self-check-out as long as the holds are shelved in the backroom.

In addition, there is a staff time-cost to this practice beyond just the check-out time. If we assume each patron that picks up holds has approximately 3 items on the shelves, we can estimate how much time staff are spending simply retrieving holds from the backroom. Given the number of holds requested for pick-up at Lake Oswego last year, and assuming each patron picks up three holds at a time, we can estimate that Lake Oswego staff spent 1,145 hours last year just walking back and forth between the circulation desk and the hold shelves in the backroom.

## LAKE OSWEGO RECOMMENDATION #4

### Reduce Collection Size by 20%

Collection management best practices have traditionally targeted 80% full as the “practical capacity” for shelves. Planning for Results author, Sandra Nelson, refers to this as the “comfort factor.” Beyond 80% full, the shelves become uncomfortable to use for patrons and staff, and demand constant shifting of material to accommodate new material. Some types of shelves, such as media cases, have a comfort factor of 100% because of their design but that is not the case with the Lake Oswego shelves. The collection would be much improved with substantial weeding to get the collection down to the 80% practical capacity. And if the collection could be further reduced, shorter shelves would make the environment more appealing and safe.

There are other standards that support the assertion that the collection size should be reduced. As of this writing, total holdings are approximately 200,000 items. Comparing it to the size of the library, the result is a ratio of 7.4 items per square foot. In contrast, other libraries in the LINCC consortium that are similar in size such as West Linn and Wilsonville have 4-4.5 items per square foot and these libraries do not suffer from the same overcrowding issues.

Yet another metric to consider is the Oregon Library Association (OLA) standard of 2-4 items per capita (2 being the threshold, 3 being adequate and 4 being excellent). In other words, a library should have at least two items per capita, and if possible, four items per capita. Lake Oswego has 5.4 items per capita. In other words, Lake Oswego could reduce their holdings to 150,000 and still fall within the “excellent” rating per OLA and it would also put them more in line with other similarly sized libraries that are not experiencing the same shelving issues observed at Lake Oswego.

When shelves are this full, patrons have a hard time finding items and safely removing items they do find. And it is certain that the time needed to shelve material is significantly higher than it should be. Based on work with numerous libraries of many sizes, we suggest 20 seconds per item as a reasonable metric for shelving.

Lake Oswego has a large corps of volunteers who assist with shelving. It is unlikely that they are able to shelve at the rate of 20-25 seconds per item (on average) partly because they are volunteers but also largely because of the condition of the shelves.

Fewer items on the shelves would make items much easier to get back into circulation for patrons to discover and use, would make the library more open and inviting, and would make the environment safer for patrons, staff, and volunteers. We are delighted to hear that Lake Oswego has already embarked on a weeding effort (since the site visit) so we encourage them to continue working toward a 20% reduction at least!

## LEDDING LIBRARY OF MILWAUKIE

Milwaukie is the third busiest library in LINCC (behind Lake Oswego and Happy Valley). It circulates just slightly more physical items per year than West Linn. However, unlike West Linn, the library is an historic building that isn't really designed with today's library services in mind. Since the site visit, there has been progress in securing funding for a new library, which is great news!

Key FY 2014-15 Milwaukie Data	
First time check-outs of physical items	463,015
Self-check-out rate	3.3%
Number of self-check-out units	1
Number of self-check-out units needed	4
Number of staff check-ins	481,863
Number of incoming delivery check-ins for holds	225,027
Average number of crates received daily via delivery	18
Average number of check-ins per hour	140
Average check-ins per day	1,357
Population served	40,101
FTE	18.05
Library size	12,652 sq ft
Holdings	110,652
	Print: 86,075
	Media, 24,577

The outside book return is near the entrance where items can be deposited before entering the library. As one enters, there is no decompression zone and the spaces are tight. To the right and just in front of the entrance are people using the public computers. A Lucky Day shelf is immediately to one's right. And in front of the circulation desk (behind people waiting in line) are shelves full of t-shirts and other merchandise for sale and many carousels of music CDs.



View upon entrance to library



Lucky Day, copier, and public computers to the right as patrons enter



In the background, multiple audio CDs for browsing also located near entrance. Also visible in the foreground is the component style self-check-in on the counter.

The library has one self-check-out, a component-style unit that sits on the lower part of the circulation desk to the left of staff who are checking people in and out and retrieving holds, CDs, and DVDs for patrons. Self-check use is 3.3% which is no surprise considering all media check-outs require staff assistance. Also, there isn't very much room on the counter with the self-check-out making it a challenging task even when all you wish to check-out is a stack of books.

The outside bookdrop deposits items into a bin in the circulation work area. A counter next to the bookdrop bin is used for checking-in items and processing holds and setting up carts for shelving. Some of the counter space around the back is also used for storing newspapers as well as for several boxes of media discs (which must be matched with the empty cases at check-out).



Patron waiting for staff to get his holds from the back



Check-in area next to outside book drop slot at entrance

Crates for sorting items to other libraries are arranged under the circulation desk. Behind the desk is a large shelving unit containing the holds that are awaiting pick-up.

The back room spaces are small with insufficient floor space for receiving books, stacking delivery crates, and staging book carts. The desks are designed more for bookkeepers or accountants than people working with stacks of material that need lots of counter space and scanners, keyboards, phones, and multiple printers and tapes and supplies. There are lots of nooks and cubbies but they aren't really well-suited to how circulation staff work.



Staff entrance where courier delivers 15 crates each day. There isn't really enough space to handle staging incoming and outgoing crates without staff tripping over one another.



Funny little space in front of the stairs and between the circulation desk and the backroom. The workstation and printer are used by all staff but area needs to be kept clear since it is the only way to get upstairs, downstairs and from the front to the back of the library.



Back room shared by Friends and multiple staff



There is a children's and teen area downstairs with two big desks used to define staff workspaces in the center of the two areas. In addition, there's an upper floor with two very cozy offices for professional staff, plus a storage closet. There's also a basement area for archival material and more storage.

The library does not currently have security gates but is considering adding them as part of the RFID implementation.

## MILWAUKIE RECOMMENDATION #1

### Milwaukie 7-bin AMH with one (1) external return, one (1) internal return, and one (1) staff induction

The recommendation for Milwaukie is to add a 7-bin automated materials handling system (AMH) that allows patrons to return material outside the library 24/7, as well as inside the library during open hours, and which has a staff induction so that any other returned items can be handled by the sorter. The sorter could be placed in the position that is now taken up by the bookdrop bin and the staff workstation with cash register (on one end, pictured below left).

The 24/7 return would come through to the sorter where the existing outside bookdrop is now and the internal return could come into the sorter from roughly where the book slot on the desk is now. It might also be possible to run the 24/7 return from the vestibule. The end of the sorter would extend toward the counters that store newspapers and discs (pictured below right).



This area is roughly 18'x18' which is more than adequate to handle a 7-bin sorter as described and still leave the rest of the area behind the circulation desk for staff. The space available for the AMH system at Milwaukie is very similar to a library in Salt Lake City. The Foothill branch, pictured below, has installed a 5-bin AMH system in a space that is at least two feet shorter and nine feet narrower.



Black box is the back of Foothill's external patron return (shown to demonstrate how a similar space incorporated AMH)



Near conveyor is where inside patron returns come in; wood tabletop is staff induction area; all bins are along the same side with one exceptions bin at the end.



Outside patron return at Foothill (another library configured like Milwaukie that has implemented an AMH system)



The outside return at Milwaukie that could be replaced with unit pictured to the left.



Inside book slot at Milwaukie is very similar to how the Foothill branch library was set up (right) before installing their AMH system.



Foothill removed part of the desk (where the book slot was) and replaced it with an internal patron return which feeds into the sorter.

Based on the number of days the library was open in FY2014-15 and the number of returns received, the average number of returns per day is 1,357. The sorter, configured as recommended below, will be able to hold 1,500 items which should be adequate for closures (but this should be verified).

Two (2) sort destinations should be configured for crates so that items that go into transit to other locations can be routed directly to crates. One crate would be for holds and one crate for returns going to other locations. The crate containing holds for other libraries should be close to the hold slip printer which should also be close to the sort destination set up for Milwaukie holds. Crates can be substituted for high-capacity bins during closed hours if necessary.

One (1) sort destination, typically at the end of the sorter, would also be configured with a high-capacity bin. This so-called "Exceptions Bin" is where overflow items would go (and possibly other items that the library designates for this bin).

Two (2) additional sort destinations should be configured with high-capacity bins to provide for additional capacity during closures.

The remaining two (2) sort destinations can be configured with medium-capacity bins during closures and ready-to-shelve carts during the day (to expedite the return to shelf process). Medium-capacity bins can hold 125 items. The carts have a capacity of 40-50 items each. Switching between the medium-capacity bins and the carts provides the best combination of ergonomic support for reshelving by day and high-capacity sorting during closures.

With five (5) sort destinations holding high-capacity bins (or crates) and two (2) sort destinations supporting medium-capacity bins or carts, the capacity of the system would be 1,500. The cost of the system (including the additional three (3) carts and two (2) medium-capacity bins that would be needed plus the high-capacity bins, patron returns (one internal and one external), and staff induction) would cost approximately \$200,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

In an RFID environment (as recommended), a key benefit of having an AMH system is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return in an RFID environment will address that.

It is estimated that two thirds of the time spent on materials handling tasks will be eliminated with the recommended AMH system. Processing bookdrop will be faster on the AMH system (staff can induct items at the rate of 900-1200 items per hour) and the return-to-shelf process will be faster and more ergonomic. Assuming 75% of check-ins can be done on the system, staff will only have to check-in 168,000 items per year instead of over 480,000. And returns that need to go in transit to another library won't have to be handled at all.

Alternatively, the library could go with all high-capacity bins and increase the capacity of the sorter to 1,750. High-capacity bins can be replaced with a crate option so it would still be possible to sort transits to a crate at one sort destination. By eliminating the extra carts and medium-capacity bins that would be needed, the 7-bin sorter cost would be reduced to closer to \$180,000.

In summary, depending on space considerations and the number of carts versus high-capacity bins, the capacity of the 7-bin sorter will be somewhere between 1,500 (as recommended) or 1,750 (100% bins that need to be unloaded for shelving) and cost between \$180,000 and \$200,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

## MILWAUKIE RECOMMENDATION #2

### Add three (3) new self-check-out units including one for downstairs for teens and children

Only 3.3% of check-outs are done by patrons. All others must be handled by staff. At 446,361 check-outs of physical items per year (downloads and renewals excluded) and a 3.3% self-check rate, this means staff check-out 431,631 items each year. In contrast, Happy Valley staff only check-out 230,517 items per year despite the fact that 509,994 items are checked out per year. This is because Happy Valley has so effectively leveraged their self-check-out technology and half of the check-outs are done by patrons for themselves.

With 85% self-check use, Milwaukie could reduce the check-outs that staff have to handle to 66,954. Obviously, cutting the number of staff check-outs so dramatically would also mean that staff could be used very differently. They wouldn't have to be chained to the circulation desk to keep up with the 130 check-outs per hour.

The most reasonable location for additional self-checks is the far end of the service desk (where plants were displayed for sale (at the time of the site visit). This space has been taken over by Friends (or another group) and should be reclaimed by the library for two self-check units. The overhang above this area should be clearly marked with "Express Check-out" or something similar so patrons see self-check as an option.

One of the three additional self-check-out units should be placed downstairs near one of the service desks so that kids and teens can use the check-out at their leisure without having to compete with adults upstairs who might be in a hurry.

### MILWAUKIE RECOMMENDATION #3

#### Move hold shelves out into public area

The other key to getting higher self-check rates is to move hold shelves out into the public area for patrons to get for themselves. As long as patrons have to ask staff for their holds, they will also ask staff to check them out. Security concerns are the reason for keeping holds behind the circulation desk. However, once RFID is implemented, the discs themselves can be tagged when necessary. Ideally, high value DVDs (e.g., movies) have the case and the disc(s) tagged so that both are secured and both must be matched in order for the check-out, or check-in to be concluded. Instead of staff opening cases to make sure the discs and cases match, the RFID system will do it for you (with some limitations).

In the case of non-media holds, some libraries keep them behind the desk to ensure that no one walks off with someone else's requested items. Again, in an RFID environment, if the items are not checked out to the right person, the check-out will not be completed and if the person tries walking away with them anyway, the alarm will sound.

So, assuming the hold shelves can be moved out into the public area which will greatly reduce the staff workload at the circulation desk and make many patrons happy (those that want to just zip in and get their holds and get out), the question is where to put the hold shelves. Given the space constraints, it is likely that a series of changes will be necessary in order to move the holds out onto the floor. These changes should be undertaken in combination with adding the recommended AMH system which will further reduce the space needs for the staffed circulation area.

Several ideas for moving material around on the public side are provided below:

Remove merchandise from their prominent display at the entrance and store behind desk (e.g., on one of the two mostly empty shelving units behind the desk). Instead, just display one or two examples of the items for sale.

Place self-service holds pick-up on the shelves around the corner (to the left) of where the self-checks would be placed. This would mean reducing some items in the collection. Or, place self-service holds where Lucky Day shelves are now (if this was done, a self-check-out unit should also be placed there)

Find a more compact way to shelve the audio discs. The multiple carousels add to the overwhelming feeling of too much stuff in too small a space and the same number could be browsable with a different kind of display unit.

### MILWAUKIE RECOMMENDATION #4

#### Designate work areas for specific purposes and ensure everyone (especially Friends) respect the limits

Given the very challenging spaces at Milwaukie, it is critical that the library protect the spaces it needs to operate effectively from the intrusion of well-meaning Friends. The far end of the library is used by several people for too many tasks and the result is a lot of in-process work that everyone has to work around. Library staff need to optimize their work spaces for the work of the library and then decide what spaces can be made available to the Friends.

It would be a good idea to clearly delineate spaces for specific purposes including Friends workspace, staff check-in area for delivery, crate staging area, etc. and work to ensure that everyone respects the boundaries.

## MOLALLA PUBLIC LIBRARY

Molalla Public Library is a 10,000 square foot building serving a population of 22,660. It is smaller than it should be by OLA standards. The current building is leased to the Library from the school district and, currently, it seems likely that the lease will not be renewed in 2023. This will provide an opportunity to find another facility that is larger and better suited to the needs of the population it services.

In the current facility, there are two service points both at one end of the library near the public computers (circulation desk and reference desk) but the short shelves inside the library make it possible to see most of the library.

Key FY 2014-15 Molalla Data	
First time check-outs of physical items	189,664
Self-check-out rate	2.4%
Number of self-check-out units	1
Number of self-check-out units needed	3
Number of staff check-ins	212,583
Number of incoming delivery check-ins for holds	109,501
Average number of crates received daily via delivery	8
Average number of check-ins per hour	69
Average check-ins per day	599
Population served	40,101
FTE	5.75
Library size	10,000 sq ft
Holdings	62,034
	Print: 47,229
	Media, 14,805

The library provides three drive-up portable bookdrops in the parking lot (opposite the front of the library) and there's also a book return slot in the circulation desk. Staff empty the three portable book drops three times a day and most check-in happens at the circulation desk.



Outside portable returns



Circulation desk with holds behind desk

There is one rarely used self-check machine (2.4%). Holds are held behind the circulation desk.

The library has no security gates nor do they plan to get any as part of the RFID implementation.

#### MOLALLA RECOMMENDATION #1

##### Add two self-check kiosks and use for check-in and check-out

As a general rule, there is one person at the circulation desk and another person out on the floor shelving or performing other circulation functions. Even if the library were to increase the number of self-service check-outs and add a small AMH system, the library would need a person staffing the circulation desk. However, it is possible to change the dynamic of that person's job by providing more self-service opportunities and use staff to support self-service rather than doing all the security and circulation functions themselves.

Based on circulation volume, the library is short two self-check-out units. The recommendation is to use the self-check units for both check-in and check-out so that staff can be more flexible in their interactions with patrons. These dual purpose kiosks could be placed on or near the existing circulation desk. Patrons would have the option to choose Check-in, Check-out or Renew items at each kiosk. In the case of check-in, the interface on the kiosks would instruct patrons what to do with each returned item (e.g., place them on the circulation counter or place them on a nearby cart (which is what staff do now after check-in)). Staff would move between the kiosks to help patrons as needed and monitor returned items (e.g., those that trigger holds would need to be handled by staff so patrons would be instructed to place them in the slot instead of on the bookcart for the dynamic "lucky day" collection).

Self-check-out units that operate as both check-in and check-out kiosks cost no more than when they are configured for check-out only.

## MOLALLA RECOMMENDATION #2

### Make holds pickup available for self-service

With the new self-service kiosks and RFID, the holds could be placed out on the public side for self-service pick-up. People wouldn't be able to check-out someone else's holds. The self-check kiosks would prevent that from happening. Without security gates, theft of holds and discs inside cases could be an issue. But if this is a concern, installing security gates would be preferable to using staff as the safekeepers of items on the hold shelves.

As long as staff have to protect items on the hold shelves, they are stuck at the desk. If the holds can be made publicly accessible, staff will have more flexibility to move around the circulation area to help patrons as needed. Those patrons able to handle their own check-in and check-out would also be able to quickly come in and take care of their needs without being forced to stand in line so a staff person can hand them their holds.

## OAK LODGE BRANCH (CLACKAMAS COUNTY LIBRARY)

Oak Lodge is the only remaining library operated by the County of Clackamas. The library is in a leased building off a busy street. It is a challenging location and the building is old but functional. At one point, it was scheduled to be closed in favor of a new library that would serve both Gladstone and Oak Lodge residents. However, plans are currently stalled pending debates about just what would eventually be built and for whom.

Key FY 2014-15 Oak Lodge Data	
First time check-outs of physical items	1893,053
Self-check-out rate	27.7%
Number of self-check-out units	1
Number of self-check-out units needed	2
Number of staff check-ins	210,975
Number of incoming delivery check-ins for holds	164,385
Average number of crates received daily via delivery	12
Average number of check-ins per hour	75
Average check-ins per day	594
Population served	29,518
FTE	6
Library size	8,722 sq ft
Holdings	9,075
	Print: 49,038
	Media, 10,037

There is an outside bookdrop on the exterior of the building but this is kept locked during open hours. Patrons can return items inside the entryway where there is another bookdrop slot that deposits items into a book bin at the circulation desk.



Outside bookdrop available after hours only



Broken bookdrop bin inside library that is only used when library is closed

The circulation desk is composed of an enclosed area near the entrance but behind you as you enter the library so it is easy to miss as you enter. Staff check-out patrons on one side of the desk. There's one component-style self-check-out unit also on the circulation desk. Holds are available for self-service pick-up. Patrons use the self-checks 27.7% of the time.

Crates are organized under the counter for sorting outgoing courier items.



Circulation desk with crates for courier items and bookdrop bin at the end, near entrance



Book drop bin where items are dropped by patrons from entrance of library

There are several meeting rooms although several of them have been taken over by Friends or staff leaving only a couple meeting rooms and one conference room available for the public. These rooms must be reserved by coming into the library and signing up. There is no online reservation system.

The library has a fairly large backroom area that is used by volunteers, Friends, and staff. A good portion of the room is dedicated to mending material (a favorite task of the one of the volunteers).

The library does not use security gates and has no plans to add them as part of the RFID implementation.

## OAK LODGE RECOMMENDATION #1

### Add two self-service kiosks for check-in and check-out

As a general rule, there is one person at the circulation desk and another person out on the floor shelving or performing other circulation functions. Even if the library were to increase the number of self-service check-out and add a small AMH system, the library would need a person staffing the circulation desk. However, it is possible to change the dynamic of that person's job by providing more self-service opportunities and use staff to support self-service rather than doing all the security and circulation functions themselves.

Based on circulation volume, the library is short two self-check-out units. The recommendation is to use the self-check units for both check-in and check-out so that staff can be more flexible in their interactions with patrons. These dual purpose kiosks could be placed on or near the existing circulation desk. Patrons would have the option to choose Check-in, Check-out or Renew items at each kiosk. In the case of check-in, the interface on the kiosks would instruct patrons what to do with each returned item (e.g., place them on the circulation counter or place them on a nearby cart. Staff would move between the kiosks to help patrons as needed and monitor returned items (e.g., those that trigger holds would need to be handled by staff so patrons would be instructed to place them in the slot instead of on the bookcart for the dynamic "lucky day" collection).

Self-check-out units that operate as both check-in and check-out kiosks cost no more than when they are configured for check-out only.

## OREGON CITY PUBLIC LIBRARY

Oregon City Public Library is one of the busier libraries in LINCC and it is likely to increase circulation by at least 15% when the remodeled, and expanded by 14,500 square feet, library opens later this year. Remodels are always a good opportunity to introduce self-service check-in and sorting as well as to bump up the use of self-check-out.

Key FY 2014-15 Oregon City Data	
First time check-outs of physical items	300,203
Self-check-out rate	22.5%
Number of self-check-out units	1
Number of self-check-out units needed	3
Number of staff check-ins	344,295
Number of incoming delivery check-ins for holds	172,816
Average number of crates received daily via delivery	12
Average number of check-ins per hour	118
Average check-ins per day	970
Population served	57,302
FTE	11.7
Library size	5,000 sq ft (current)
Holdings	78,482
	Print: 64,075
	Media, 14,407

The new library will have three entrances; security gates are not planned (although the new facility will be wired to allow possible addition at a later date). The library currently has two book returns. Both are portable, stand-alone book returns, one is inside the library and one is outside near the street for easy access by car (but very inconvenient for staff). Staff report they spent 728 hours checking in bookdrop returns from the outside bookdrop last year, and 1,092 hours checking in material returned inside. The outside bookdrop will continue to be available after the remodel although its location will make it easier for staff to empty.

Oregon City typically has two library assistants working on materials handling tasks as well as doing some work on programs such as storytime.

## OREGON CITY RECOMMENDATION #1

### 7-bin AMH with one (1) internal return, one (1) staff induction, and option to add one (1) external return at a later date

The recommendation for Oregon City is to add a 7-bin automated materials handling system (AMH) inside the library during open hours. The system should be configured with a staff induction so that other returned items (e.g., portable book drop returns) can be handled by the sorter. While it isn't possible for the library to consider now, a 24/7 patron return that feeds into the same sorter should be added whenever it is possible. The tricky part of the external return is that it would need to go through one of the walls of the historical part of the building so, for the time being, this option must be deferred.

In order to plan for the eventuality of providing 24/7 returns, it is prudent to look at how many items are checked in each day. Based on the number of days the library was open in FY2014-15 and the number of returns received, the average number of returns per day is 970 (with 1,117 expected in the new building). The sorter, configured as recommended below, will be able to hold 1,250 items which is probably adequate for closures since it is unlikely that as many items are returned during closures as are received on open days (but this should be verified).

In addition to capacity considerations, the sorter also needs enough sort destinations to sort items at a granular enough level that it will support a faster return-to-shelve process but without sizing the system above what is reasonable considering the volume. The recommendation of seven (7) sort destinations would be adequate.

One (1) sort destination should be configured for a crate so that items that go into transit to other locations, but which are not being sent to fill holds, can be routed directly to crates. These items can be sorted directly to the crate and staff won't have to handle them at all. However, depending on the number of items typically returned to Oregon City that need to be routed to another location, the crate may need to be substituted with high-capacity bin (250 items) during closures.

Another (1) sort destination should be dedicated for holds. This sort location should be next to the transit crate and near the hold slip printer. As staff match hold slips (which will print out automatically) to items that trigger a hold, the ones that are for Oregon City patrons can be placed on a nearby book cart for immediate shelving. The ones for patrons at other locations can be dropped into the nearby transit crate. We've assumed this too would be a sort destination that could be a crate or a high-capacity bin.

One (1) sort destination, typically at the end of the sorter, would be configured with another high-capacity bin. This so-called "Exceptions Bin" is where overflow items would go (and possibly other items that the library designates for this bin).

The remaining four (4) sort destinations can be configured with medium-capacity bins during closures and ready-to-shelve carts during the day (to expedite the return to shelf process). Medium-capacity bins can hold 125 items. The carts have a capacity of 40-50 items each. Switching between the medium-capacity bins and the carts provides the best combination of ergonomic support for reshelving by day and high-capacity sorting during closures. With two sort destinations holding high-capacity bins (or crates) and five sort destinations supporting medium-capacity bins or carts, the capacity of the system would be 1,250. The cost of the system (including an additional six (6) carts and four (4) medium-capacity bins that would be needed plus the high-capacity bins, patron returns (one internal and one external), and staff induction) would cost approximately \$215,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

In an RFID environment (as recommended), a key benefit of having an AMH system is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return in an RFID environment will address that.

At the very least, the time spent on materials handling tasks will be reduced by half with the recommended AMH system which means that both of the library assistants working on materials handling tasks now could be spending twice as much time on programs and other activities instead of working on check-in and check-out. Processing bookdrop will be faster on the AMH system (staff can induct items at the rate of 900-1,200 items per hour) and the return-to-shelf process will be faster and more ergonomic. Assuming 65% of check-ins can be done on the system, staff will only have to check-in 155,000 items per year instead of over 344,000. And returns that need to go in transit to another library won't have to be handled at all.

When configured with ready-to-shelve carts, the system has to be monitored by circulation staff so that 40-50 item capacity of the carts is not exceeded (resulting in items being sent to the exception bin). But at 118 items being returned per hour (on average), it wouldn't be necessary for someone to remain in the back room constantly. They'd still be able to perform other circulation functions inside the backroom as well as out in the library.

Alternatively, the library could go with all high-capacity bins which would be less costly and would increase the capacity of the sorter to 1,750. High-capacity bins can be replaced with a crate option so it would still be possible to sort transits to a crate at one sort destination. By eliminating the extra carts and medium-capacity bins that would be needed, the 7-bin sorter cost would be reduced to closer to \$180,000 (including the external return). Without the external return, the initial cost of the system could be as low as \$140,000. A sorter configured with all high-capacity bins could be virtually ignored as long as necessary so one staff person could easily split their time between tasks in their backroom and other materials handling tasks in other areas of the library. Instead of having library assistants manage the shelving carts, the shelving staff could unload the bins to shelving carts as part of their workload.

In summary, depending on the desire to sort to carts and the need for high-capacity bins, the capacity of the 7-bin sorter will be somewhere between 1,250 (as recommended) or 1,750 (100% bins that need to be unloaded for shelving) and cost between \$180,000 and \$215,000. Initial costs (excluding the external patron return) would be between \$140,000 and \$175,000. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

## OREGON CITY RECOMMENDATION #2

### Add four (4) additional self-check-out units for a total of five (5) in the new library

Even though the circulation volume at Oregon City doesn't demand so many self-check-out units, it is important that self-checks be located at places where people need them. The new library will have three entrances including the original entrance. Given the layout, one self-check-out unit should be located near the original entrance and two could be placed in the shared entryway between the two entrances on the main floor. A self-service holds pickup shelf should also be provided in this area so that patrons have quick and easy access to their holds and to a self-check.

Another self-check should be placed in the Children's Library so that kids can do their own check-outs without being rushed and so the self-check can be themed for children. The fifth self-check unit is recommended for the second floor where the Teen's Library will be located along with the non-fiction and fiction adult collection.

## SANDY PUBLIC LIBRARY

Sandy is a 12,000 square foot library that is beautiful inside and out. The spaces are unusual but appealing with high ceilings and big timbers that are well suited for a town known as the “gateway to Mt. Hood.”

Key FY 2014-15 Sandy Data	
First time check-outs of physical items	203,016
Self-check-out rate	24.7%
Number of self-check-out units	2
Number of self-check-out units needed	3
Number of staff check-ins	236,500
Number of incoming delivery check-ins for holds	114,008
Average number of crates received daily via delivery	81
Average number of check-ins per hour	81
Average check-ins per day	666
Population served	25,438
FTE	9.25
Library size	11,620 sq ft (current)
Holdings	55,900
	Print: 47,129
	Media, 8,771

The library provides a drive-up, portable book return (on the parking lot side of the library in the rear) and two bookdrops on the outside of the building on one side.



Drive-up portable return on the shopping mall side of the library



Walk-up returns on the side

The entrance to the Library is a large open space with shelves for new books and a self-service holds pick-up shelf along one side and a free standing counter with two self-checks on top. The self-check-out rate is 24.7%.



New books on shelf barely visible to the left and holds shelved on white shelf further back in the room



Counter with two self-check-out units



Tiered set of counters with service point for patrons in the front and staff work areas in the back

In the center of the entry area is a tiered set of counters. The bottom level is used for circulation staff serving the public. Up one level is another area where circulation staff do most of their checking-in and sorting. The crates are organized under the counter, on the floor. On the wall side are two bookdrop bins where items from the outside returns drop in. These bins are small and staff need to come in to empty them during holiday closures.



Upper section with return bins on left and check-in area for staff



Lower level with service points for staff

From the entrance, patrons must travel up a long ramp which leads directly to a Reference Desk located in the children's area. If you turn right at the Reference Desk, you see another long ramp that leads up the stacks.



Ramp from circulation desk to rest of library.  
Reference Desk in Children's area at the top of the ramp.



Another ramp leading from Children's area to stacks.  
Computers and work tables are to the right.



View of public computers and some study tables from  
Children's area



More study tables and stairs to second level

From the Reference Desk and off to the right is an open area with plenty of public computers, room for laptop users to work, and study tables and the stairs for going up to the second floor.

The library provides meeting rooms upstairs and a community room off the stacks area in the back. There is a second entrance near the community room so the room can be used even if the Library isn't open (theoretically).

The Library has no security gates but is considering them as part of the RFID implementation.

### SANDY RECOMMENDATION #1

#### Add signage sized for the spaces that help people navigate the spaces more easily

Although there are some helpful signs here and there, in general the signs are too few and they are too small for the intended reading distances. These signs are hindering how effectively customers can navigate through the library to find the services, facilities or materials they desire.

The design and installation of a cohesive wayfinding scheme will empower patrons to do things independently; from the library entrance and throughout the library the patron should be presented with wayfinding information to allow them to make decisions and navigate the library. This in turn will free up precious staff time allowing staff to assist patrons with more meaningful interactions instead of answering the same 'where are...' questions over and over.

A wayfinding designer will help the library resolve current issues concerning terminology, sign location strategy, sign and text sizing, sign visibility, and use of color, while keeping signs to a strategic minimum.

### SANDY RECOMMENDATION #2

#### Replace walk-up bookdrops with self-service return connected to 3-bin sorter and staff induction

The walk-up returns deposit material into two small bins located in the circulation work area behind the service point just below it. Behind this area, at the same level, are three offices. Without drastically changing this area, it would be possible to open it up the existing circulation area and make room for a 3-bin sorter that would have the capacity to handle return volumes even during closures.

With three high-capacity bins, the sorter could absorb 750 items which is probably sufficient even for closures since the Library receives, on average, 666 items per open day (but volume received over closures should be verified). If the space could be made to work, a five-bin sorter would be even better.

With a minimum of three sort destinations, the Library could receive and check-in items that go into transit to another location directly to a crate so no handling would be required (except for transit items that are holds). Holds and other material requiring staff handling would go to one bin and all other items that could be immediately reshelfed would go to the third bin.

In an RFID environment, the additional benefit of having an AMH system like the one recommended here, is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return with RFID will address that.

Finally, having a printer located on the sorter for easily matching hold slips to returns would also save staff time and reduce the amount of scanning individual items that is required.

The cost of a 3-bin sorter configured with three (3) high-capacity bins (which can also be converted to a crate during the day to eliminate any handling of transits), configured with one (1) external patron return and a staff induction station would cost approximately \$125,000. Depending on the rate of use, such a system could save 500-985 staff hours a year in staff check-in time alone, and allow the staff at the circulation desk to focus their energies on patrons that need more assistance.

### SANDY RECOMMENDATION #3

#### Replace monitors on self-check-outs in entryway so they can be seen easier in that space

The bright open space that welcomes visitors to the Sandy Library is wonderful in many ways but it does pose challenges when it comes to using certain kind of computer monitors. The existing flat-screen monitors make it nearly impossible to see on bright days and certain times of day. Sometimes the screen's setting can be tweaked to make them easier to read in high light condition (e.g., change the background color) or perhaps a glare filter would make the difference. It may be necessary to relocate the self-checks and provide something akin to an awning like are used on screens mounted on the outside of the building.

## WEST LINN PUBLIC LIBRARY

West Linn Public Library is one of the busiest libraries in LINCC and it is only one of two libraries (Happy Valley being the other) that have achieved a self-check-out rate over 50%. It is also one of the libraries that allows for self-service holds pick-up shelf which undoubtedly helps the library achieve the higher self-check-out rate. At 61.1% self-check use, West Linn reduces the number of items staff have to check-out from 434,066 to 168,852. This level of check-out use bodes well for the adoption rate of self-check-in.

Key FY 2014-15 West Linn Data	
First time check-outs of physical items	434,066
Self-check-out rate	61.1%
Number of self-check-out units	4
Number of self-check-out units needed	4
Number of staff check-ins	445,384
Number of incoming delivery check-ins for holds	236,926
Average number of crates received daily via delivery	17
Average number of check-ins per hour	153
Average check-ins per day	1,255
Population served	29,544
FTE	16
Library size	28,000 sq ft
Holdings	112,499
	Print: 84,791
	Media, 27,708

The interior of the library is beautiful with its quiet reading area complete with fireplace and tall windows and open staircase to the children's library downstairs. There is a convenient walk-up book return on the outside of the building with a short term parking spot nearby and there is also a book slot inside the circulation desk and a stand-alone book return bin downstairs in the children's area.

Two self-check machines are on the circulation desk counter and two are downstairs on the Children's Librarian's desk and another is placed near the self-service holds pick-up area. Patrons use the self-check machines 61.1% of the time.

The library makes extensive use of volunteers. Last year, volunteers put in 4,579 hours working on the pick list (pulling holds), missing list (finding items that are missing) and shelving. The Library uses Volgistics, an affordable and effective volunteer management software product to help with scheduling and managing the work of their volunteers. Even so, one staff person spends 50% of her time coordinating volunteers.

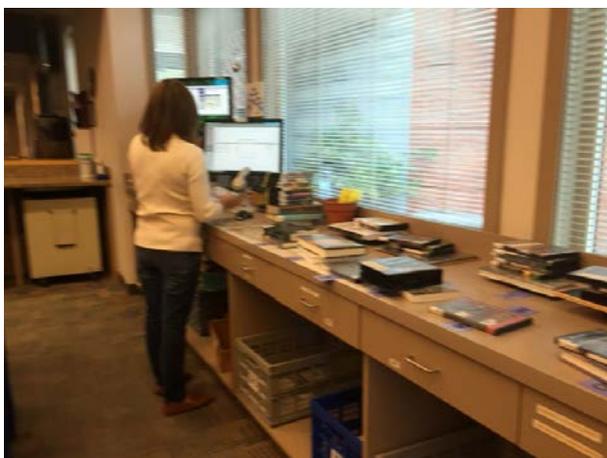


Self-service holds pickup shelves



Two self-check-out units on circulation desk near holds shelves

The check-in workflow is to unload material from the bookdrop bins, check them in, and arrange them in stacks on the counter. Each stack is then moved to either a crate (if it is going to another library) or to a nearby shelving cart. From the shelving carts, items are then fine sorted to a ready-to-shelve cart and labeled as ready for shelving.



Staff person checking in items and organizing in stacks



Stacks are placed on labels indicating where they should be placed next.



Empty crates that will be loaded with transit items



Staging area for ready to shelve carts as well as ready to check-in bookdrop items



Self-checks on Children's Librarian's desk



Bookdrop bin in Children's area

The library does not have security gates nor do they have plans to add them as part of the RFID implementation.

## WEST LINN RECOMMENDATION #1

### 9-bin AMH with one (1) external return, one (1) internal return, and one (1) staff induction

The recommendation for West Linn is to add a 9-bin automated materials handling system (AMH) that allows patrons to return material outside the library 24/7, as well as inside the library during open hours, and which has a staff induction so that any other returned items can be checked-in and sorted by the AMH system.

It might be possible to put the 24/7 return where the outside bookdrop is now but it would be difficult to also provide an inside patron return and have them both connect to the sorter. However, if the 24/7 return was provided in the vestibule area, just inside the front door (to the left as patrons enter the outside door), this could be easily connected to an inside patron return (to the left as patrons enter the library) and both could then be connected to a sorter that runs into the backroom where the inside bookdrop slot and check-in station are now.



Photo showing spaces where recommended AMH could be installed

Based on the number of days the library was open in FY2014-15 and the number of returns received, the average number of returns per day is 1,255. The sorter, configured as recommended, will be able to hold 1,500 items which should be adequate for closures (but this should be verified).

In addition to capacity considerations, the sorter also needs enough sort destinations to sort items at a granular enough level that it will support a faster return-to-shelf process but without sizing the system above what is reasonable considering the volume. The recommendation of nine sort destinations should be adequate for West Linn.

One (1) sort destination should be configured for a crate so that items that go into transit to other locations, but which are not being sent to fill holds, can be routed directly to crates. These items can be sorted directly to the crate and staff won't have to handle them at all. However, depending on the number of items typically returned to West Linn that need to be routed to another location, the crate may need to be substituted with high-capacity bin (250 items) during closures.

Another (1) sort destination should be dedicated for holds. This sort location should be next to the transit crate and near the hold slip printer. As staff match hold slips (which will print out automatically) to items that trigger a hold, the ones that are for West Linn patrons can be placed on a nearby book cart for immediate shelving. The ones for patrons at other locations can be dropped into the nearby transit crate. We've assumed this too would be a sort destination that could be a crate or a high-capacity bin.

One (1) sort destination, typically at the end of the sorter, would also be configured with a high-capacity bin. This so-called "Exceptions Bin" is where overflow items would go (and possibly other items that the library designates for this bin).

The remaining six (6) bins can be configured with medium-capacity bins during closures and ready-to-shelve carts during the day (to expedite the return to shelf process). Medium-capacity bins can hold 125 items. The carts have a capacity of 40-50 items each. Switching between the medium-capacity bins and the carts provides the best combination of ergonomic support for reshelving by day and high-capacity sorting during closures. With three sort destinations holding high-capacity

bins (or crates) and six sort destinations supporting medium-capacity bins or carts, the capacity of the system would be 1,500. The cost of the system (including the additional nine (9) carts and six (6) medium-capacity bins that would be needed plus the high-capacity bins, patron returns (one internal and one external), and staff induction) would cost approximately \$247,500. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

In an RFID environment, a key benefit of having an AMH system is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return in an RFID environment will address that.

It is estimated that two thirds of the time spent on materials handling tasks will be eliminated with the recommended AMH system. Processing bookdrop will be faster on the AMH system (staff can induct items at the rate of 900-1,200 items per hour) and the return-to-shelf process will be faster and more ergonomic. Assuming 65% of check-ins can be done on the system, staff will only have to check-in 155,000 items per year instead of over 344,000. And returns that need to go in transit to another library won't have to be handled at all.

At least one person would still need to work in the backroom in order to operate the AMH system during open hours if the ready-to-shelve carts are used. With a 40-50 item capacity, they need to be swapped out more frequently than a high capacity bin but the benefit is that these items can be taken directly to the shelves and interfiled without needing to unload each item and sort them to bookcarts.

Alternatively, the library could go with all high-capacity bins and increase the capacity of the sorter to 2,250. High-capacity bins can be replaced with a crate option so it would still be possible to sort transits to a crate at one sort destination. By eliminating the extra carts and medium-capacity bins that would be needed, the 7-bin sorter cost would be reduced to closer to \$195,000. A sorter configured with all high-capacity bins would not require such close monitoring so one staff person could split their time between tasks in their backroom and other materials handling tasks in other areas of the library.

In summary, depending on the desire to sort to carts and the need for high-capacity bins, the capacity of the 9-bin sorter will be somewhere between 1,500 (as recommended) or 2,250 (100% bins that need to be unloaded for shelving) and cost between \$195,000 and \$247,500. Cost estimates include shipping and training and first year maintenance but not taxes. The Library should assume 10% of the purchase cost per year in maintenance after the first year.

## WEST LINN RECOMMENDATION #2

### Replace desktop self-check-out units in Children's area with dual purpose self-service kiosks

Because the children's area now has a staffed service point as well as a book drop just for children's material, it would be an easy transition to use dual purpose self-check units for both self-check-out and self-check-in instead of standard self-check-in units.

These dual purpose kiosks could be placed near the existing book return in the Children's area, in front of the service desk. Patrons would have the option to choose Check-in, Check-out or Renew items at each kiosk. In the case of check-in, the interface on the kiosks would instruct patrons what to do with each returned item (e.g., place them in the nearby bookdrop (for items that triggered a hold) or on a bookcart placed nearby (creating a dynamic "lucky day" collection).

Self-check-out units that operate as both check-in and check-out kiosks cost no more than when they are configured for check-out only.

## WILSONVILLE PUBLIC LIBRARY

Wilsonville Public Library is a very spacious library with several separate areas for different parts of the collection and for the meeting rooms and reading areas, teen areas and children’s room. The Library also has two special collections, the Heritage and Northwest Collections, and big open spaces with exhibits and displays. The Library has an active Friends group that runs a used book store in a separate part of the building and makes extensive use of volunteers.

Key FY 2014-15 Wilsonville Data	
First time check-outs of physical items	326,065
Self-check-out rate	39%
Number of self-check-out units	2
Number of self-check-out units needed	3
Number of staff check-ins	372,701
Number of incoming delivery check-ins for holds	187,710
Average number of crates received daily via delivery	15
Average number of check-ins per hour	117
Average check-ins per day	1,050
Population served	25,071
FTE	16.26
Library size	28,677 sq ft
Holdings	129,673
	Print: 109,141
	Media, 20,532

The circulation desk is very large and runs around an inside corner of the library that separates the public part of the library from the staff side.



Long service desk wraps around the part of the library with staff spaces including circulation work room

The staff area is also very spacious including the circulation workroom which is very nicely organized with tilted crates arranged under the counters for sorting items to the other libraries and a standardized arrangement of bookcarts to sort checked-in items to be shelved.



Angled crates arranged under circulation work counter for sorting deliveries

Once the sorting carts are full, they are off-loaded from the sorting carts and fine sorted to shelving carts and then staged outside of the workroom.



Sorting carts in circulation room



Sorting carts are off-loaded to shelving carts, fine-sorted and staged here

The self-check rate of 39% is higher than some LINCC libraries but still low. Although the library provides for self-service holds pick-up (and provides very nice signage for the holds pick-up area), there isn't a self-check-out machine right next to the holds.

There are two (2) component style self-check-outs placed on the circulation desk.



Two self-check-out units on circulation desk

There are multiple return options for patrons. Outside the library is a portable book return unit on the curb for easy access from a vehicle, plus two book return slots on the exterior wall of the library near the entrance, and two more return slots inside the library for patrons to insert items which fall into bins inside the workroom.



Walk-up outside return by entrance



Drive-up portable return along the far side of the building



Inside book returns deposit items into circulation workroom

The library does not currently have security gates; gates are being considered as part of the RFID implementation.

## WILSONVILLE RECOMMENDATION #1

### Add 7-bin AMH with one (1) external return, one (1) internal return, and one (1) staff induction

The recommendation for Wilsonville is to add a 7-bin automated materials handling system (AMH) that allows patrons to return material outside the library 24/7, as well as inside the library during open hours, and which has a staff induction so that any other returned items can be handled by the sorter.

The ideal location for the system is where a small conference room is now located. Reconfiguring this space for a sorter (and expanding it to allow for staging areas) would allow the items to be returned from the vestibule 24/7 and also from inside the library after they enter.



Boy is sitting where the 24/7 self-service check-in is recommended.  
This would be connected to sorter inside what is now a conference room.

Given the vast amount of space available to staff and the extensive wrap-around service desk that is largely unused, it seems like the library is ripe for a remodel of these areas. If the AMH system could be placed as recommended, and the portable bookdrop was removed, it is reasonable to expect that 65-76% of all returns would go through the AMH system. However, it is always highly unpopular with patrons to remove a drive-up bookdrop so the higher self-check rate would likely not be worth the negative customer service impact.

The other option is to put a sorter in the existing workroom with two inductions for patron returns where the internal returns are now. This would not require very many modifications to the building but would likely result in a much lower check-in rate; probably closer to 35%.

Based on the number of days the library was open in FY2014-15 and the number of returns received, the average number of returns per day is 1,050. The sorter, configured as recommended, will be able to hold 1,250 items which should be adequate for closures (but this should be verified).

In addition to capacity considerations, the sorter also needs enough sort destinations to sort items at a granular enough level that it will support a faster return-to-shelve process but without sizing the system above what is reasonable considering the volume. The recommendation of seven (7) sort destinations should be adequate for Wilsonville whether the system is located in the conference room space or in the existing circulation workroom.

One (1) sort destination should be configured for a crate so that items that go into transit to other locations, but which are not being sent to fill holds, can be routed directly to crates. These items can be sorted directly to the crate and staff won't have to handle them at all. However, depending on the number of items typically returned to Wilsonville that need to be routed to another location, the crate may need to be substituted with a high-capacity bin (250 items) during closures (if there is a 24/7 return).

Another (1) sort destination should be dedicated for holds. This sort location should be next to the transit crate and near the hold slip printer. As staff match hold slips (which will print out automatically) to items that trigger a hold, the ones that are for Wilsonville patrons can be placed on a nearby book cart for immediate shelving. The holds for pickup at other locations can be dropped into the nearby transit crate (or bin when necessary).

One (1) sort destination, typically at the end of the sorter, would also be configured with a high-capacity bin. This so-called “Exceptions Bin” is where overflow items would go (and possibly other items that the library designates for this bin).

The remaining six (4) bins can be configured with medium-capacity bins during closures (if there is a 24/7 return) and ready-to-shelve carts during the day (to expedite the return to shelf process). Medium-capacity bins can hold 125 items. The carts have a capacity of 40-50 items each. Switching between the medium-capacity bins and the carts provides the best combination of ergonomic support for reshelving by day and high-capacity sorting during closures. With three sort destinations holding high-capacity bins (or crates) and four (4) sort destinations supporting medium-capacity bins or carts, the maximum capacity of the system would be 1,250. The cost of the system (including the additional six (6) carts and four (4) medium-capacity bins that would be needed plus the high-capacity bins, patron returns (one internal and one external), and staff induction) would cost approximately \$215,000. Cost estimates include shipping and training and first year maintenance but not taxes. The library should assume 10% of the purchase cost per year in maintenance after the first year.

In an RFID environment, a key benefit of having an AMH system is that single disc media items can be verified automatically at the self-service return. This means that patrons will be prevented from returning a DVD when the disc is missing (kicking off a whole process that is time consuming for both staff and patrons). It also means that staff will no longer have to open every case to verify that the right disc is inside the right case. Staff open cases hundreds of times a day and it takes a toll ergonomically and the self-service return with RFID will address that.

It is estimated that two thirds of the time spent on materials handling tasks could be eliminated with the recommended AMH system as long as the portable bookdrop on the curb was removed. If the portable, drive-up bookdrop stays, staff will still need to spend time unloading items each day and then inducting them onto the sorter. Depending on the volume of returns that go to the drive-up, this may or may not be a significant amount of staff time. But, at the very least, even with the portable drive-up return, staff materials handling (not including shelving) time should be cut in half with either of the proposed AMH systems because of the elimination of some or most check-ins by staff and the faster check-ins with sorting for those that staff still will have to handle: plus the improved handling of holds and items going into transit.

Even though the crates are tucked out of the way under the counter and are angled nicely to make it easy to drop items in, it still takes time to move between the crates when sorting items into them. Plus, there are two crates per library which the staff generally combine together before staging for pick-up.

Wilsonville sends out approximately 18 crates per day. On average, crates contain 25 items each (per couriers) which means Wilsonville staff sort approximately 450 items daily to the long, two rows of crates. Assuming staff sort at the rate of 300 items per hour, they are spending over an hour of staff time per day, walking up and down the crates, sorting items into them. The AMH system will sort items to the crates and as the crate fills up, staff will set the crate aside. When there is a stack of 4-5 crates, the stack can be moved to the courier pick-up location. Even if Wilsonville continues to send out 18 crates a day, it will only take staff a few minutes to move the stack 4-5 times each day.

Processing bookdrop will be faster on the AMH system (staff can induct items at the rate of 900-1,200 items per hour) and the return-to-shelf process will be faster and more ergonomic. Assuming 65% of check-ins can be done on the system, staff will only have to check-in 130,000 items per year instead of over 372,000. And returns that need to go in transit to another library won't have to be handled at all.

At least one person would need to keep tabs on the AMH system during open hours if the ready-to-shelve carts are used. With a 40-50 item capacity, they need to be swapped out more frequently than a high capacity bin but the benefit is that these items can be taken directly to the shelves and interfiled without needing to unload each item and sort them to book-carts. Given the number of returns per hour at Wilsonville, monitoring the ready-to-shelve carts could be done easily by one person doing other things in the workroom.

Alternatively, the library could go with all high-capacity bins and increase the capacity of the sorter to 1,750. High-capacity bins can be replaced with a crate option so it would still be possible to sort transits to a crate at one sort destination.

By eliminating the extra carts and medium-capacity bins that would be needed, the 7-bin sorter cost would be reduced to closer to \$180,000.

Should the library opt to put a sorter in the workroom instead, the recommendation would be to use the carts since there would be no external patron return so sorter capacity would not be an issue. A 7-bin sorter configured as recommended above but with two internal patron returns and no external return would cost \$200,000. If the internal-only option was configured with all high-capacity bins, the cost would be closer to \$165,000.

In summary, depending on the desire to sort to carts and the need for high-capacity bins, the capacity of the 7-bin sorter will be somewhere between 1,250 (as recommended) and 1,750 (100% bins that need to be unloaded for shelving) and cost between \$180,000 and \$215,000 with an external patron return and an internal patron return, or between \$165,000 and \$200,000 if placed inside the library for internal returns only. Cost estimates include shipping and training and first year maintenance but not taxes.

The Library should assume 10% of the purchase cost per year in maintenance after the first year.

## WILSONVILLE RECOMMENDATION #2

**Add at least one self-check-out unit and place one in children's area and another closer to holds pick-up area**

Wilsonville patrons use the self-check-out machines located on the circulation desk 39% of the time. This is a pretty good self-check rate given there is no signage indicating there is a self-check-out option (they are located under the Circulation Desk sign) and they are not compelling (insofar as they just look like a computer sitting on the circulation desk) and they are not near the Holds Pickup Shelves. Many more patrons would opt to use the self-check machines if they were more conveniently located.

A significant percentage of patrons use the library as a pick-up location rather than a browsing library. These patrons prefer to get in and out of the Library as quickly as possible after picking up their requested items from the holds pickup shelves. These patrons generally prefer to use a fast, intuitive self-check-out machine over standing in line to be checked out by a person. Therefore, providing a self-check-out unit near the holds is recommended.

Another popular place for a self-check-out machine is in the children's area. The newer self-check kiosks are much more interesting to look at and tend to attract the kids who love using them. Placing one in the children's area allows the units to be used by kids without being pressured to hurry (e.g., by those patrons that are picking up their holds). Therefore, we recommend adding a self-check in the children's area.

## CONCLUSION

The LINCC partner libraries have taken a strategic step forward by pursuing RFID and automated materials handling as a consortium. Rather than going off into different directions and pursuing their own custom solutions, they recognize that they can make better choices for their staff, community and patrons if they work together.

The libraries have an opportunity to further leverage this strategy by coordinating how they do tagging, how security is handled, how material is sorted and by whom, and also how several other shared services are, or could be centrally managed.

This Final Report has provided numerous suggestions for how to leverage the efforts of each of the libraries and also how to leverage the LINCC Library Network staff to create a well-supported, efficient consortium of state-of-the-art libraries.



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## Project Summary\*

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**Project Name:** LINCC RFID/AMH Implementation

**Department:** BCS Library Network

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### Prepared By

Document Owner(s)	Project/Organization Role
Greg Williams	Library Network Manager / Project Manager

*\*This document summarizes the **RFID Project Charter for the Libraries in Clackamas County (LINCC)** which is a living document used to coordinate and track the project details.*

## PROJECT OVERVIEW

RFID implementation has been discussed in LINCC since (at least) 2008. In FY 14/15, the LINCC Directors Group identified RFID implementation as their top, cooperative-wide priority.

RFID technologies allow libraries to affix a small, adhesive tag containing an antenna and chip into various items (books, DVDs, etc...), and encode basic information about the item onto this tag (e.g., its unique identification number, institutional ownership information, whether or not it has been properly checked out, etc...).

This tag can then be read by various software and hardware, and the information read from the tag can be used to facilitate different transactions and capabilities. Staff and patrons can more quickly check out materials, additional security options can be implemented to help discourage theft, and much manual processing/sorting can be automated, potentially allowing libraries to make more efficient use of existing (and limited) human resources.

It is anticipated that RFID implementation within LINCC will:

- Improve the library patron circulation experience by:
  - Improving the ease and speed with which patrons can conduct self-checkout of library materials.
  - Providing additional services/capabilities at self-check machines.
  - Improving the availability of library materials by allowing them to be returned, checked-in, and shelved more quickly faster.

- Providing a consistent, quality self-check experience County-wide.
- Reduce manual labor involved in many back-of-the-house circulation activities, potentially allowing libraries to make more efficient use of existing (and limited) human resources.
- Streamline the movement of materials within and between libraries.
- Provide libraries with additional options for collection security.

## PROJECT EXECUTIVE SUMMARY

- **GOALS:** The goal of this project is to complete an initial implementation of RFID and AMH technologies within the LINCC cooperative. By the end of this project, we anticipate:
  - All LINCC libraries will have tagged 100% of their existing, circulating collection.
  - All LINCC libraries will have developed process/procedures to tag all newly acquired, circulating materials.
  - A common set of tagging (and related materials handling) standards will be developed and implemented within the LINCC cooperative.
  - All LINCC libraries will utilize a common hardware/software platform for self-checkout systems.
  - Library Network will implement AMH technologies to support a centralized “rough sort” of all transited materials.
  - A subset of LINCC libraries will implement on-site AMH technologies.
  - A subset of LINCC libraries will implement on-site security gates.
- **SCOPE:** The project will involve:
  - Determination of LINCC tagging and material handling standards and best practices.
  - RFID tagging of approximately 1,000,000 existing items.
  - Conversion of approximately 70 staff workstations within LINCC libraries to RFID-enabled workstations.
  - Implementation of centralized self-check management system and deployment of approximately 40 self-check machines within LINCC libraries.
  - Implementation of a central sorter at the Library Network office.
  - Implementation of security gates at up to four LINCC libraries, and implementation of centralized gate management software.
  - Implementation of AMH sorters at two LINCC libraries.
  - Change management support and training for LINCC staff and patrons.
- **TIMELINE:** We anticipate this project will be completed by 6/30/2017.
- **APPROACH/ORGANIZATION:** This project will be a collaborative effort between Library Network and LINCC Libraries. Library Network will work with an Implementation Committee (consisting of designated representatives from all LINCC libraries) to make recommendations and coordinate/carry out implementation activities. Policy- and/or funding-recommendations will be approved by the LINCC Directors Group (when applicable), or (in cases where impacts are limited to a single library) by

local library management. Procurement and billing will be coordinated by Library Network, in conjunction with Clackamas County Procurement.

- **COSTS:** The **estimated** project implementation costs are: between \$1 million and \$2 million, depending on implementation decisions made by local libraries.

## PROJECT SCOPE

### Goals and Objectives

Goals	Objectives
LINCC collections will be converted from barcode-only to RFID.	<ol style="list-style-type: none"> <li>1) Establish LINCC standards/best practices for consistent tagging of materials and visual inspection requirements/procedures.</li> <li>2) Tag all LINCC collections by agreed-upon date.</li> <li>3) Establish local procedures, including vendor pre-processing profiles, for tagging of all new materials.</li> </ol>
Patrons County-wide will have a consistent, high-quality self-checkout experience no matter which LINCC library they use/visit.	<ol style="list-style-type: none"> <li>1) Select a common self-checkout hardware and software platform that will be used in all LINCC libraries.</li> <li>2) Establish a mutually-agreed upon “baseline” number of self-checkout machines based on circulation.</li> <li>3) Establish a fixed, regular replacement schedule for self-checkout machines.</li> <li>4) Implement centralized management capabilities to allow efficient maintenance, updates, and customizations.</li> <li>5) Establish guidelines for self-checkout user interface which balances County-wide configuration/branding with local customizations.</li> <li>6) Implement additional features/services at point of self-checkout (e.g., event information, materials recommendations, etc...)</li> </ol>
Improve efficiency of handling transited materials.	<ol style="list-style-type: none"> <li>1) Implement a central sort capability to eliminate need for libraries to presort transited materials by destination.</li> <li>2) Implement capability for “batch” check-ins, improving efficiency of transited item check-ins at LINCC libraries.</li> <li>3) For a subset of libraries, implement onsite AMH sorters to automate “fine sort” activities.</li> </ol>

## Project Structure Approach

- General project coordination, administration, and monitoring will be provided by BCS Library Network.
- Technical recommendations, testing, research, and implementation support will be provided as needed/requested by Library Network Staff.
- Policy and implementation recommendations/procedures will be evaluated, discussed, and proposed by the LINCC RFID Implementation Committee
  - The committee Chair, with support from the Project Coordinator, will plan, coordinate, and direct the Committee's efforts.
- Policy and resource commitment recommendations will be submitted to the LINCC Directors Group for review and approval.

## Glossary and abbreviations

The following abbreviations and terms may be used throughout this document.

<b>TERM</b>	<b>DEFINITION</b>
LINCC	Libraries in Clackamas County. Refers to the cooperative consisting of the 13 physical public libraries in Clackamas County, operated by 11 cities, with one branch operated by Clackamas County
RFID	Radio Frequency Identification. Refers to the technology allowing small 'tags' (adhesive labels containing antenna and digital storage) to be placed in library materials. Data can be stored on the tag, and read by other hardware/software.
AMH	Automated Materials Handling. Refers to equipment which can read RFID tags, and automatically sort/route materials based on pre-defined instructions.
BCS	Clackamas County Business and Community Services. Refers to the parent department of the Library Network office.

# RFID Project Update

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Greg Williams, Manager, BCS Library Network



*Gary Barth, Director, Business and Community Services*  
*Laura Zentner, Deputy Director, Business and Community Services*



- **RFID Technology**
  - What is RFID?
  - Who's using RFID?
- **RFID in LINCC**
  - History
  - Overview of current project
- **Project Next Steps**
  - Procurement
  - Tagging of materials
  - Equipment rollout

# RFID Technology

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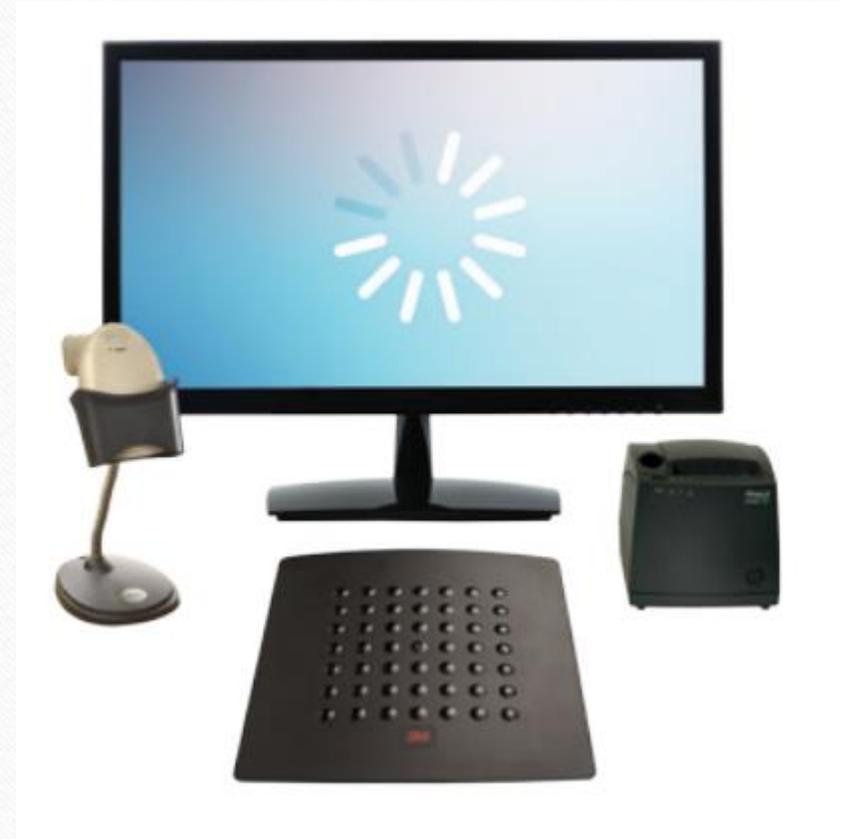
## RFID Technology - Tags

- RFID tags are adhesive labels containing an antenna and a small chip.
- Information can be written to and stored on the chip.
- Tags come in different shapes and sizes, designed to be used with different types of media.
  - Book tags are generally square and covered in paper.
  - Media tags (for CDs and DVDs) are circular and use transparent material.



## RFID Technology - Equipment

- Once library materials are tagged, the tags can be read by different types of equipment, which can improve or streamline various processes.
  - Staff circulation
  - Patron self-checkout
  - Security gates
  - Automated materials handling (AMH)



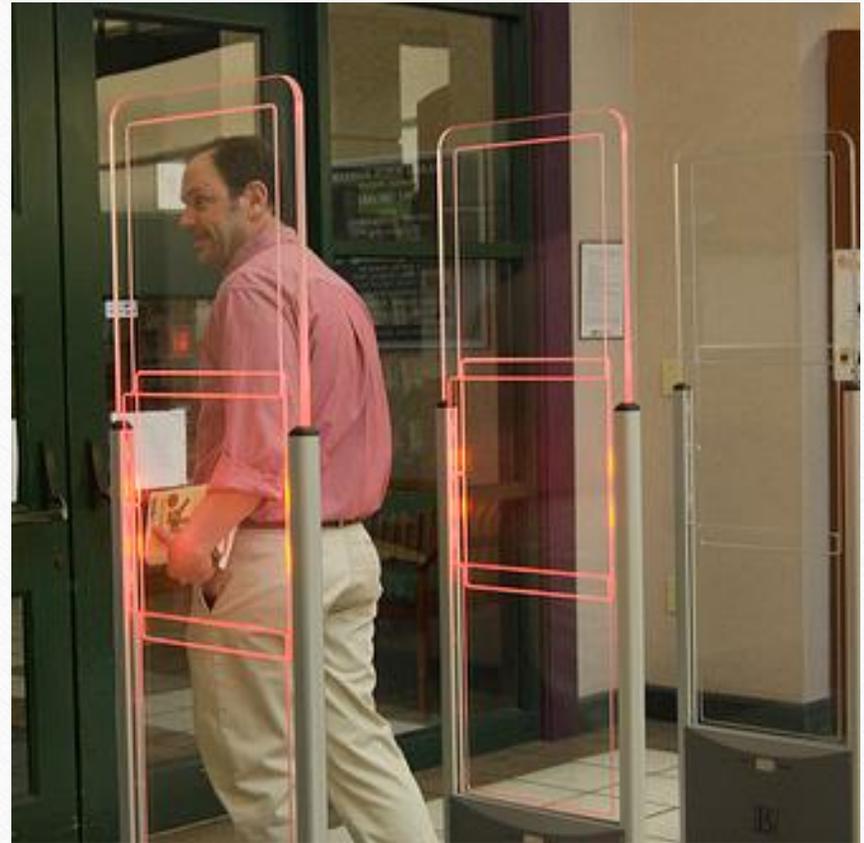
## RFID Technology - Equipment

- Once library materials are tagged, the tags can be read by different types of equipment, which can improve or streamline various processes.
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  - **Patron self-checkout**
  - Security gates
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## RFID Technology - Equipment

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  - **Security gates**
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## RFID Technology – Equipment

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  - Staff circulation
  - Patron self-checkout
  - Security gates
  - Automated materials handling (AMH)



## Who's using RFID?



(RFID implemented 2011)



(RFID implemented 2012)



(RFID implemented 2008)

Chemeketa Cooperative  
Regional Library Service



Community. Literacy. Technology.

(RFID implementation in progress)

# RFID in LINCC

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## RFID History in LINCC

- Discussed since at least 2008.
- Identified as LINCC Directors Group top priority in FY 14/15.

### DG's Priorities FY 14-15

- RFID
- E-Commerce
- BTOP (Fiber project)
- Financial – annual bill back estimates to directors in November
- Authority Control
- System clean up
  - Procedures for keeping database cleaned up after Authority Control
  - Removal of old records no longer needed
- AV processing review
- Stats for State Report
- Full staffing of Network – micro computer specialist hired?
- 13-digit barcode on radar
- Work with committee to select new software and test before implementation
- Mobile app

# RFID Project Overview

- Worked with consultant (2015-2016) to develop system-wide recommendations.
- LINCC RFID Implementation Committee has been working to cooperatively outline project parameters, discuss operational issues, formulate policy recommendations, and plan implementation.
- Committee makes recommendations to LINCC Directors Group.
- LINCC Directors Group evaluates and acts on committee recommendations.
- BCS Library Network coordinating project.



## Project Charter Document

**Project Name:** LINCC RFID/AMH Implementation  
**Department:** BCS Library Network

### Prepared By

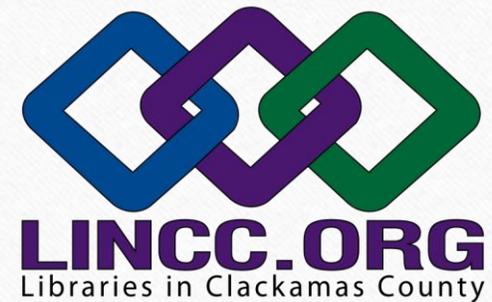
Document Owner(s)	Project/Organization Role
Greg Williams	Library Network Manager / Project Manager

### Project Charter Version Control

Version	Date	Author	Change Description
1.0	6/27/2016	Greg Williams	Document created
1.1	7/29/2016	Greg Williams	Additional information/estimates added based on data collected from libraries

# RFID Project Next Steps

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## Procurement

- **Estimated** total project cost is \$1.8 million.
  - Library Cities will reimburse the County for a significant portion of these costs.
  - Up to \$700,000 (estimated) will be expended by BCS Library Network, funded by cost savings and reserves.
- **Estimated** ongoing annual maintenance costs of \$180,000.



### Project Charter Document

**Project Name:** LINCC RFID/AMH Implementation  
**Department:** BCS Library Network

#### Prepared By

Document Owner(s)	Project/Organization Role
Greg Williams	Library Network Manager / Project Manager

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## Tagging of collections

- Approximately 1 million items will need to be tagged!
  - Most libraries plan to use 'in-house' labor.
  - Some libraries plan to outsource tagging.
  - Library Network is helping libraries plan and coordinate their tagging efforts.
- Priority of LINCC libraries is to start tagging as soon as possible.



## Equipment rollout

- Once materials are tagged, additional equipment can be implemented/deployed.
  - Staff circulation stations
  - Self-checkout stations
  - Security gates
  - Automated material handlers
- Goal is to complete project by June 30, 2017.

### DG's Priorities FY 14-15

- ~~RFID~~
- E-Commerce
- BTOP (Fiber project)
- Financial – annual bill back estimates to directors in November
- Authority Control
- System clean up
  - Procedures for keeping database cleaned up after Authority Control
  - Removal of old records no longer needed
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Questions?

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