



## Volume 8: Transition Plans & Decision Trees

# A Study of the Optimization of the Blue Box Material Processing System in Ontario *Final Report*

June 2012

Prepared for Waste Diversion Ontario by:



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*Sustainable Systems for a Waste-Free Future*

**STEWARDEDGE**

# Volume 8: Transition Plans & Decision Trees

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# Volume 8: Transition Plans & Decision Trees

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## 1. Transition Plans

Optimization of the Blue Box recycling processing system for the Province of Ontario will take time, require the collaboration of a wide range of stakeholders and decision makers incorporating trade-offs during implementation and be a process of continuous improvement that always looks forward as the material stream changes and technology improves.

The transition path from current facilities, operational arrangements, responsibilities and funding, to more optimized Blue Box recyclables processing will vary for each current municipal MRF and/or transfer station location and for each community that delivers Blue Box material to that location.

Transition plans have been prepared as part of this study to outline the process that these municipal MRF and/or transfer station locations and affected communities may want to move through as options for optimization of the Blue Box recycling processing system are considered and then implemented. The transition road maps are not intended for privately-owned MRFs or transfer stations. However, municipalities should consider contracting with private sector facilities where applicable.

Broadly speaking, the following types of transition plans have been developed, given the most common outcomes for each location:

- An existing municipal MRF will:
  - remain a MRF in current or upgraded form
  - convert to a transfer station
  - no longer have a role in the Blue Box system – to be repurposed or a stranded asset
- An existing municipal transfer station (TS) will:
  - remain a transfer station
  - no longer have a role in the Blue Box system – to be repurposed or a stranded asset
- A new greenfield MRF or TS in a new location may be required and some communities with no facilities or with facilities that will become stranded assets may need to sponsor development of or commit tonnage to that new greenfield MRF or TS

Communities that aren't directly sponsoring a MRF or TS in the new system (called in this report "direct haul communities") will need to choose the MRF or TS facilities to which they will deliver their Blue Box recyclables, i.e. existing municipal facilities, new greenfield facilities or existing private sector facilities. Many factors will drive the process of actual transition for each current municipal MRF and/or transfer station location and its affected communities, some of which will be within the control of the stakeholders and decision makers involved in the process and some of which will not be.

Consider the following factors that will not be able to be controlled:

- Overall structure of the Blue Box system as determined by provincial law
- System funding structure - partial producer responsibility with reimbursement or shift to 100% producer responsibility with greater control
- Status of the location's CofA – does it allow change to take on a new role
- Private MRFs, existing or new, that may offer viable alternatives
- Timing of decision-making in transition plans for other municipal facilities that may affect your facility and community and your transition process
- Availability of funding from CIF or equivalent future program

- Realities of underlying costs that affect optimization and have been taken into account in this study (fuel costs, direct haul times, transfer costs and distances, MRF operating costs, economies of scale, available technology, etc.)

The best transition process will take into account these realities while integrating the many factors that are in the control of stakeholders and decision makers, including:

- Timing – how soon will the community begin the transition planning process for their facility
- Speed – how quickly will the community move through the transition planning process
- Supply – currently the communities that supply the facility choose where to take their material and are responsible for all arrangements for that delivery
- Cost Share – currently the facility's costs are partially covered by municipal partners
- Vision and Goals – the facility and affected communities must develop their own vision and goals for optimizing their Blue Box system, given the realities presented above, and make choices that best represent their interests and the larger mission.

The transition plans are designed to build in consideration of these factors. A variety of decision support tools are suggested in order to facilitate the process of both developing and implementing transition plans towards a more optimized Blue Box system for your region.

Some of these tools have already been provided as part of this body of work, including:

- The Blue Box processing optimization model: This CIF-funded study has resulted in the development of a GIS (Geographical Information System) decision support tool. The tool incorporates and analyzes data on the physical realities of your facility and affected communities (location of the households in each community, direct haul times from those locations, transportation routes and time/cost to transport, operating costs for transfer and processing, etc.). This tool is available to support your transition planning process as final solutions for optimization are being considered.
- The preliminary cost assumptions developed with the model: The CIF funded the development of cost data for transfer of recyclables across the province and for processing of recyclables into market ready commodities – cost information that can inform decision making as you move forward in your transition planning process.
- The preliminary options developed with the model: The CIF funded the use of the model to evaluate and present the most promising optimized solutions for each region, each municipal facility and each community – using the best information available to the study team at that time.

This Volume includes the following additional decision support tools:

- Decision Tree for Each Municipal Facility and Greenfield Location: Decision trees have been prepared for the situation of each location and its affected communities that describe a process for sifting through the preliminary options developed with the model and presented in this study. These decision trees identify “go/no-go” decision points at key stages in the process, given the specific options available to that location in an optimized system.
- “Go/No-Go” Decision Support Tools: At each of these “go/no-go” decision points the transition plans identify decision support tools and processes that can be used to move through that decision point.

## 2. Transition Plan Summary - Decision Trees and Lookup Tables

Each regional transition plan summary has a set of “lookup tables” that allow each municipal and greenfield facility and affected communities to determine how they fit into the baseline scenario or the options that vary from baseline for that particular region.

These lookup tables help guide each municipal facility or community as it undertakes the process of moving through a series of the “decision trees” that have “go/no-go” decision points for determining the most favourable outcome for their role in an optimized Blue Box recycling processing system.

The lookup tables help the municipal facility or community identify:

- What role it might play in a regional hub and spoke system – as a “hub” MRF, a “spoke” transfer station, or a feeder “direct haul” supply of Blue Box recyclables.
- How these roles might vary under the different options that are under consideration in a region.
- What key drivers will push the decision-making timeline in the hub and spoke system that they may be part of – contract expiration dates for existing MRF arrangements as an example.
- How greenfield MRF or TS development or private merchant capacity might be a factor in the hub and spoke systems they are potentially involved in.

The lookup tables then link with specific decision trees that are matched to that facility or communities’ unique circumstances. These decision trees link, guiding the process in the right direction based on the “go/no-go” decisions that are made by the affected parties.

This series of decision trees move the user through key questions. Are they direct haul only? Do they operate a MRF? Do they operate a transfer station?

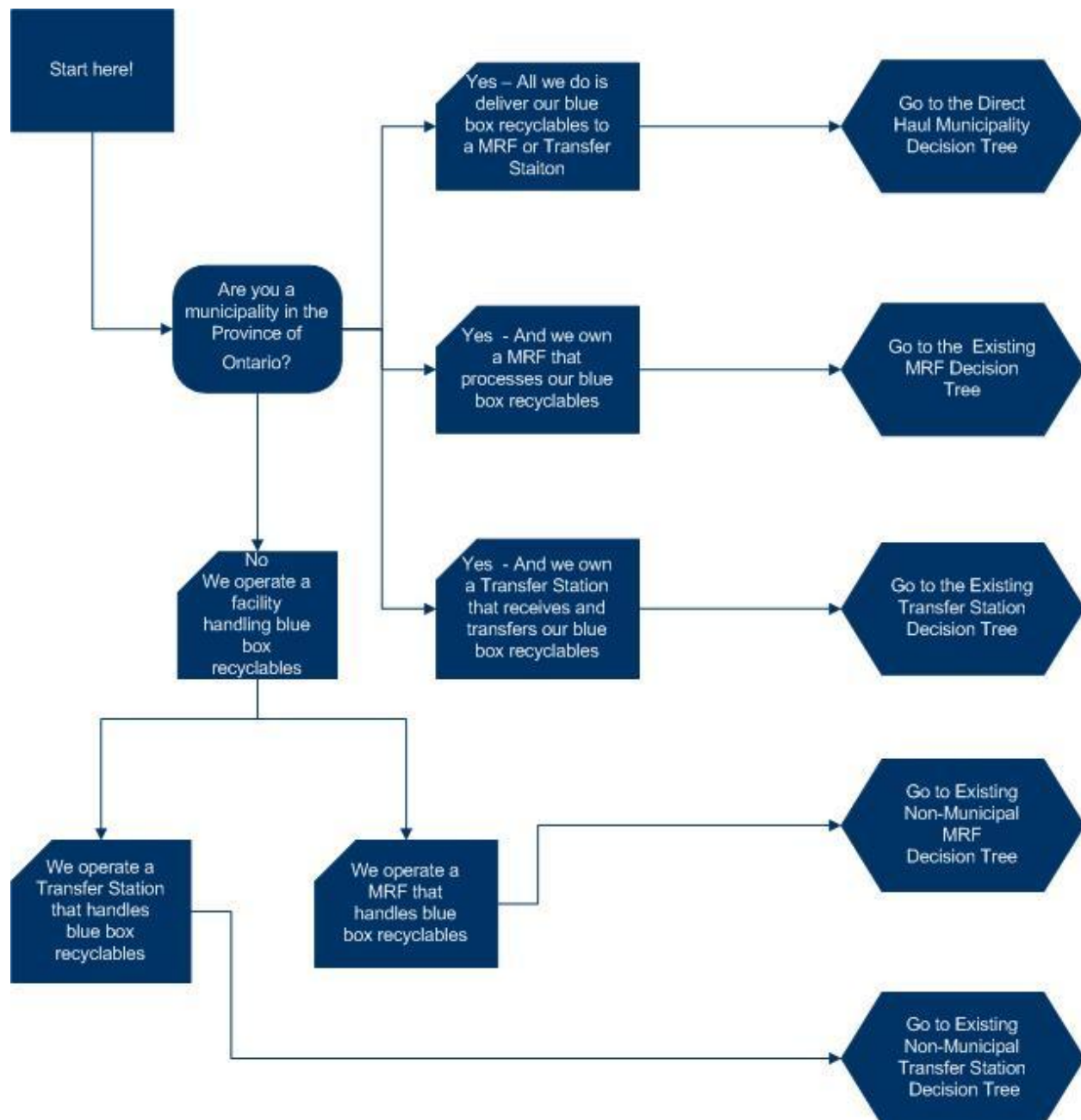
The decision tree then directs the user to the next sequential decision tree. For example:

- A direct haul only community would move to the “Direct Haul Municipality” decision tree that would then provide a road map for the steps and go/no-go decisions applicable to that situation.
- A municipality that operates a MRF would move to the “Existing MRF” decision tree with steps to evaluate its role as either an upgraded MRF, a complete rebuild MRF, a transfer station conversion or no role, i.e. a stranded asset.

These decision trees guide the transition plan for each facility and community and they are iterative. For example, a community with a MRF that will become a stranded asset then becomes a “Direct Haul Municipality” and then moves through that decision tree process.



**Figure 1: Moving Through Your Transition Plan for an Optimized Blue Box Processing System**



There are decision trees for every type of situation and outcome anticipated by the Blue Box processing optimization model.

- Direct Haul Municipality decision trees anticipate their delivery to either an existing or proposed MRF or transfer station, the potential to host a new greenfield MRF or transfer station and the possibility that private merchant capacity or a solid waste authority's capacity may be utilized.

- Existing MRF decision trees anticipate outcomes that include marketing of excess capacity, a major MRF upgrade, a complete MRF rebuild, conversion to a transfer station or the outcome of no role – repurpose or a stranded asset.
- Existing TS decision trees similarly anticipate marketing of excess capacity, a major upgrade, a complete rebuild, or the outcome of no role, i.e. repurpose or a stranded asset.
- New greenfield MRFs or Transfer Stations are accommodated.
- The potential interest of private merchant or other non-municipal (e.g. solid waste authority) capacity is anticipated in the process as well.

The Blue Box processing optimization model informs the transition planning process, as shown in each decision tree. The study results or new runs of the model identify roles and evaluates new variations as they surface. For example:

- Evaluation of an existing site location takes into account site constraints that could include CofA compliance questions, possibility of a successful CofA amendment, or the potential for an alternative site if CofA or other site issues cannot be resolved.
- A technical plan for the proposed project (upgrade, conversion to TS, etc.) is developed and the underlying business case justification is formulated – essentially that next level of technical and cost analysis needed to move forward.
- Negotiations with users, the municipalities whose recyclables (direct haul or transfer) will provide the necessary baseload of materials to allow the project to be financed and thus developed.
- The final stages of go/no-go decision-making as the project is coming together, all supply sources commit, the CofA is amended if required and financing, design, build and operation is authorized.
- Private merchant capacity options are considered.

## 2.1. Decision Tree Process for Direct Haul Municipalities

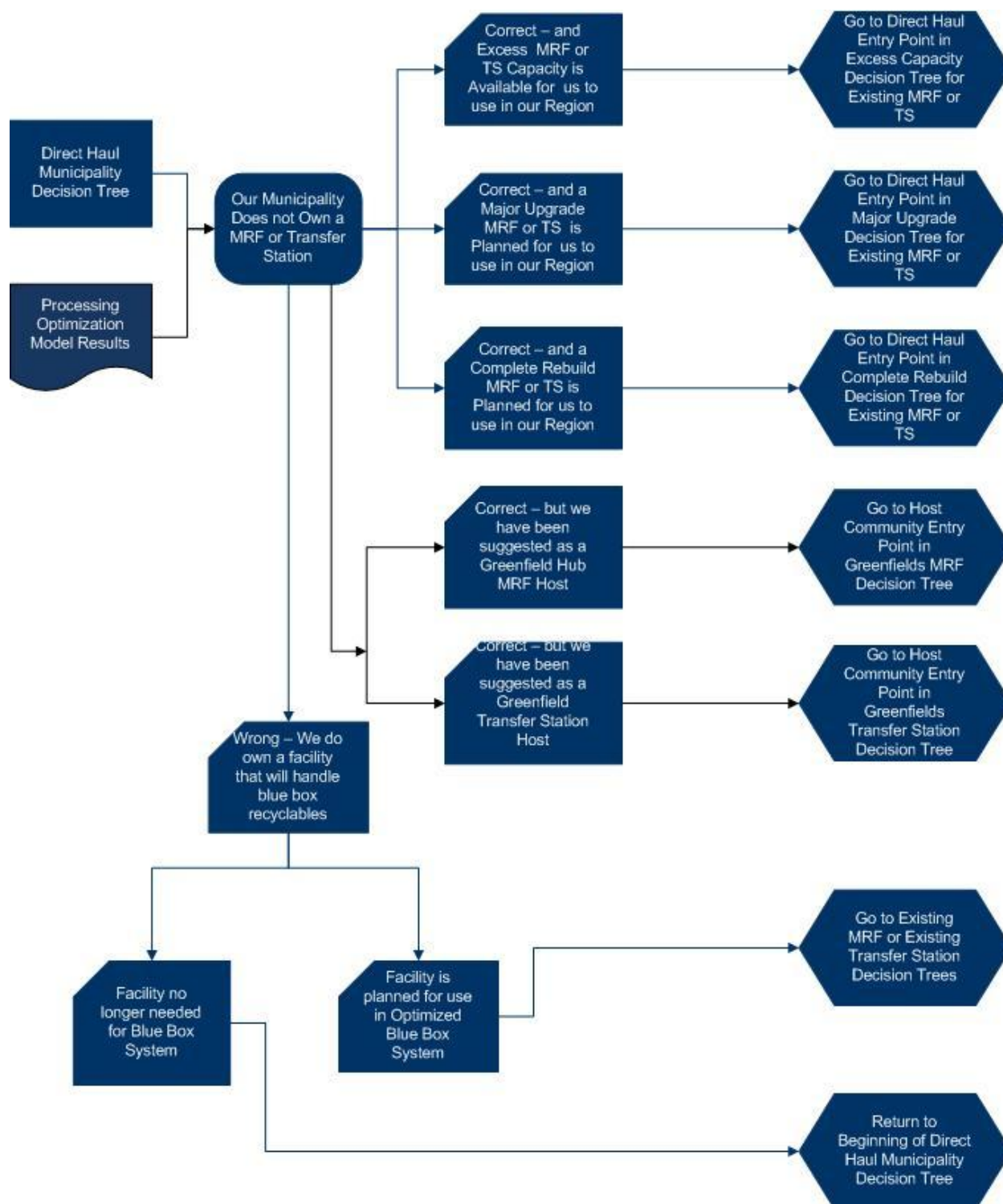
The following decision tree provides a road map for the transition process for municipalities that direct haul to a transfer station or MRF but do not have a direct ownership position in an existing transfer station or MRF in the Blue Box recycling processing system.

As shown in this decision tree, a direct haul municipality is guided through the decision making process, informed by the optimization model results, to determine which major decision tree applies to their situation – which type of MRF or transfer station project will they consider for direct haul and what role will they play in the transition plan for that project and how does it impact their transition plan options.

As well, if the direct haul municipality is recommended as a potential host community for a greenfield Hub MRF or transfer station then they will be directed to the appropriate decision tree.

Should they actually have a MRF or Transfer Station that will now be repurposed or become a stranded asset in that system they are then returned to the beginning of the Direct Haul Municipality Decision Tree.

**Figure 2: Decision Tree Process for Direct Haul Municipalities**



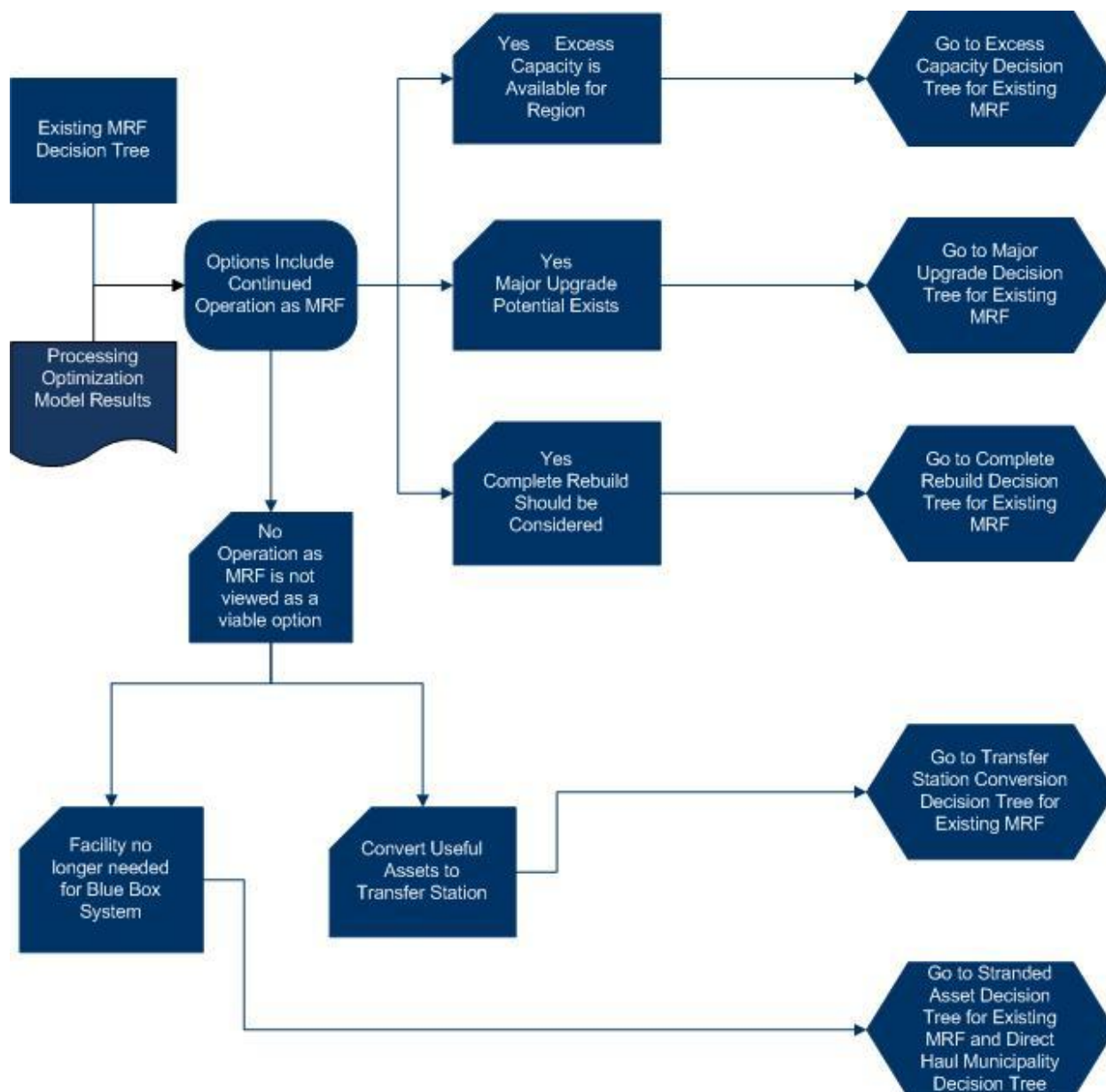


## 2.2. Decision Tree Process for Existing MRFs

The following set of decision trees provide a road map for the transition process for existing MRFs.

Figure 3 illustrates the basic outcomes that are likely for every existing MRF in the Blue Box system.

**Figure 3: Existing MRF Decision Trees**



As shown in this decision tree, an existing MRF location in the current system may or may not be considered for continued operation in a new optimized processing solution. If that MRF is being considered in some role then the future use will depend on the current MRF technology and capacity.

If the existing MRF's technology and capacity allow acceptance of additional materials from other communities (delivered by transfer) then the decision tree directs the process to the "Excess Capacity

for Existing MRF” decision tree. If technology is not up to necessary standards then the process is directed to the “Major Upgrade for Existing MRF” decision tree. If the technology is so limited, or the cost of a major upgrade is a barrier, then the process is directed to the “Complete Rebuild for Existing MRF” decision tree.

Alternatively, if consideration for continued operation as a MRF is not on the table based on the results of the Blue Box optimization model, then viable conversion of usable assets on the site to a recycling transfer station function may be considered – with the process directed to the “Transfer Station Conversion for Existing MRF” decision tree. If service as a transfer station is not on the table then the process is directed to the “Stranded Assets for Existing MRF” decision tree.

In all cases the Blue Box processing optimization model has a continued role in determining the options available to that particular MRF location and the applicable decision trees that can serve as a road map for the transition plan for that location.

Following is a detailed description for each of these second tier decision trees for existing MRFs

### **2.2.1. Excess Capacity Decision Tree for Existing MRF**

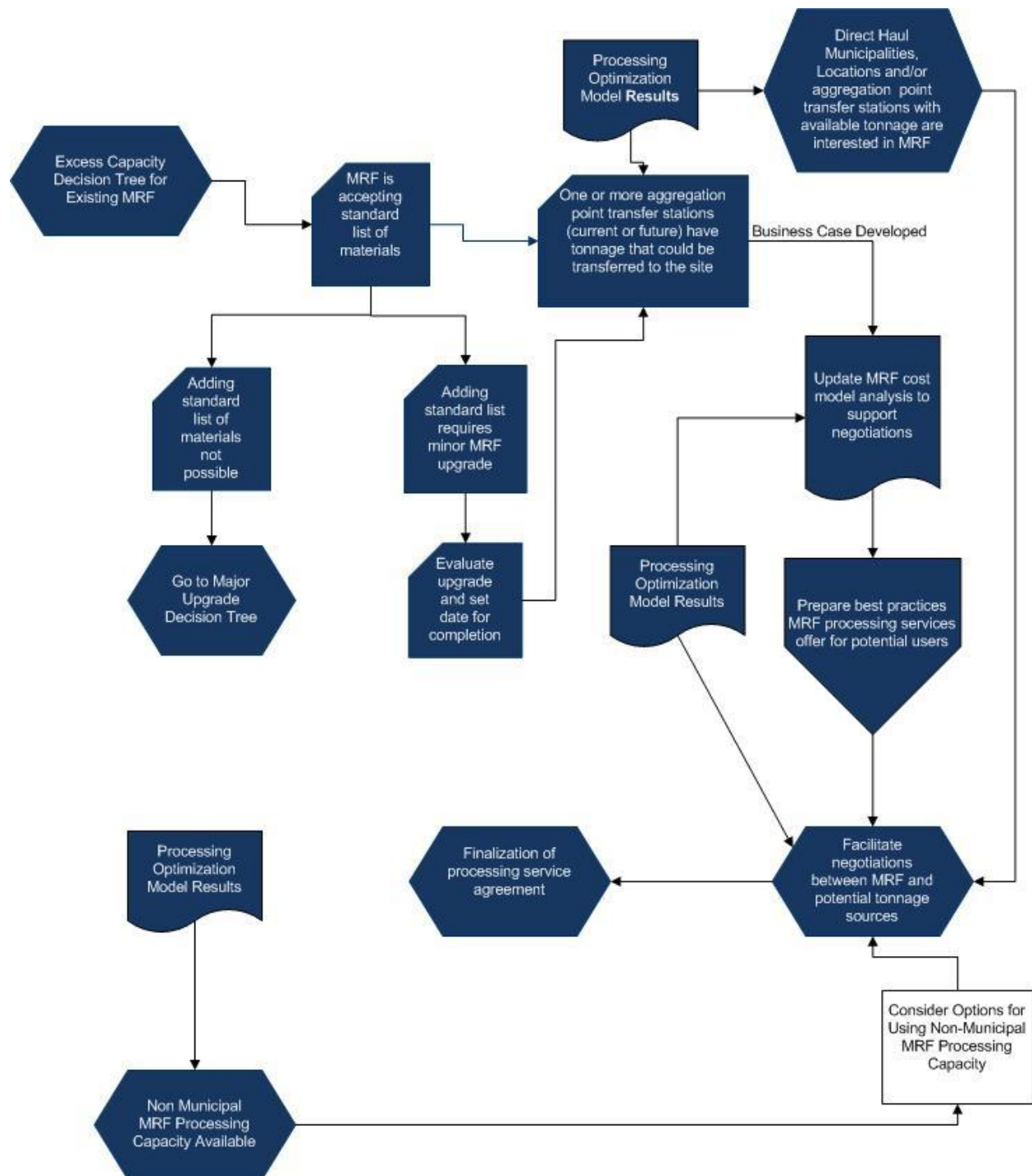
Figure 4 illustrates the transition planning process that would serve as a road map for a MRF that has been tagged as a MRF in an optimized Blue Box system and has excess capacity that can be made available for receiving transferred recyclables in an expanded “hub and spoke” processing network.

The first decision step is the initial assessment of the municipal facility’s readiness for this new role – is the MRF able to accept the standard list of materials – as one example. If it is not, and minor upgrades are needed in order to make this possible, then a process is defined for completing that set of minor upgrades. On the other hand, should the MRF not be able to accept the standard list of materials, even with minor upgrades (or meet any other requirement associated with its new role) then that the transition planning process for that location would return to the primary Decision Tree for Existing MRFs for re-evaluation.

The second stage in the process, as shown in the decision tree, is consideration of available supply sources that could benefit from the available capacity at the MRF, guided by the results of the Blue Box optimization model. The decision tree illustrates the process for negotiation of those supply arrangements, following best practices in MRF processing service arrangements, with the financial arrangements guided by the cost analysis components of the processing optimization model.

The net result, for existing MRFs with excess capacity, would be for the facility to realize its optimum “sweet spot” in cost effective and efficient operation – made possible by the higher tonnage feeding into the MRF under the hub and spoke processing model.

**Figure 4: Excess Capacity Decision Tree for Existing MRF**



### 2.2.2. Major Upgrade Decision Tree for Existing MRF

Figure 5 illustrates the transition planning process that would serve as a road map for a MRF that has been tagged as a MRF in an optimized Blue Box system but requires a major upgrade so that it can effectively serve in its new role to receive transferred recyclables in an expanded “hub and spoke” processing network.

The first decision step is the initial assessment of the facility’s suitability for a MRF upgrade. Does the CofA allow the upgrade, or are there other site or facility constraints that would prevent the upgrade such as limitations for building expansion due to land constraints. If there are insurmountable barriers to the upgrade then the location would return to the primary Decision Tree for Existing MRFs for re-evaluation while a new site was identified for a greenfield MRF project to replace the potential upgrade. That new site would then be moved through the decision tree process.

If the site is found to be suitable for the upgrade then the business case for the upgrade is developed, first by determining that there is available supply for the targeted capacity of the upgrade project (based on the processing optimization model) which then moves to development of a technical plan for the MRF upgrade, based on state of the art technology and best practice operations management approaches. This technical plan then moves forward into the pre-development stage where supply is confirmed, likely through negotiations with the communities that could supply their tonnage (both direct haul as well as transfer).

This stage includes updating of the MRF cost model for the site, the creation of a best practices business arrangement between the upgraded MRF and the supplying communities and the finalization of that processing service agreement in order to pave the way for the financing, design and build stages of the project. If the minimum supply requirements are met then the facility can move forward with construction. If not, then the facility returns to the Existing MRF Decision Tree again.

The net result, for existing MRFs that successfully move through the Major Upgrade Decision Tree is the development of a state-of-the-art MRF that is ready to fill a key role in creating an efficient and cost effective regional hub and spoke processing system.

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graph TD
    Start{{Major Upgrade Decision Tree for Existing MRF}} --> Determine[/Determine that MRF site is suitable for upgrade/]
    Determine --> CofA1[/CofA or site constraints do not support MRF expansion/]
    Determine --> CofA2[/CofA and site constraints allow MRF expansion/]
    CofA1 --> ReturnExisting{{Return to Existing MRF Decision Tree for current site}}
    CofA2 --> Results1[/Results indicate that available supply exists for project/]
    Results1 --> Processing1[/Processing Optimization Model Results/]
    Results1 --> NewSite[/New Site Identified/]
    NewSite --> Results2[/Results indicate that available supply exists for project/]
    Results2 --> Processing2[/Processing Optimization Model Results/]
    Processing1 --> Finalization{{Finalization of processing service agreement}}
    Processing2 --> Finalization
    Processing2 --> Negotiations{{Facilitate negotiations between MRF and potential tonnage sources}}
    Finalization --> Agreements1[/Minimum supply agreements not secured/]
    Finalization --> Agreements2[/Minimum supply agreements secured/]
    Agreements1 --> ReturnExisting2{{Return to Existing MRF Decision Tree}}
    Agreements2 --> GoDecision{{Go Decision: move to financing and construction}}
    GoDecision --> AmendCofA{{Amend CofA if required}}
    AmendCofA --> ConsiderOptions[Consider Options for Using Non-Municipal MRF Processing Capacity]
    ConsiderOptions --> Negotiations
    ConsiderOptions --> Processing3[/Processing Optimization Model Results/]
    ConsiderOptions --> UpdateCost[/Update MRF cost model analysis to support negotiations/]
    UpdateCost --> PrepareOffer[/Prepare best practices MRF processing services offer for potential users/]
    PrepareOffer --> Negotiations
    Negotiations --> DirectHaul{{Direct Haul Municipalities, Locations and/or aggregation point transfer stations with available tonnage are interested in MRF}}
    DirectHaul --> Processing4[/Processing Optimization Model Results/]
    Processing4 --> TechnicalPlan[/MRF Upgrade Technical Plan developed - including application of state of the art technology and operations management practices/]
    TechnicalPlan --> BusinessCase[/Business Case Developed/]
    BusinessCase --> UpdateCost
  
```





The process shows a series of decision steps that are similar in concept to the Major Upgrade Decision Tree approach. First is the initial assessment of the facility's suitability for a MRF upgrade. If there are insurmountable barriers to the upgrade then the facility would return to the primary Decision Tree for Existing MRFs for re-evaluation while a new site was identified for a greenfield MRF project to replace the rebuilt MRF under consideration. That new site would then be moved through the decision tree process.

If the existing MRF is found to be suitable for a complete rebuild then the business case for that rebuild is developed, first by determining that there is available supply for the targeted capacity of the rebuild project (based on the processing optimization model) which then moves to development of a technical plan for the rebuilt MRF, based on state of the art technology and best practice operations management approaches. This technical plan then moves forward into the pre-development stage where supply is confirmed, likely through negotiations with the communities that could supply their tonnage (both direct haul as well as transfer).

This stage includes updating of the MRF cost model for the site, the creation of a best practices business arrangement between the upgraded MRF and the supplying communities and the finalization of that processing service agreement in order to pave the way for the financing, design and build stages of the project. If the minimum supply requirements are met then the facility can move forward with construction. If not then the facility returns to the Existing MRF Decision Tree again.

The net result, for existing MRFs that successfully move through the Complete Rebuild Decision Tree is the development of a new state-of-the-art MRF that is ready to fill a key role in creating an efficient and cost effective regional hub and spoke processing system.

#### **2.2.4. Transfer Station Conversion Decision Tree for Existing MRF**

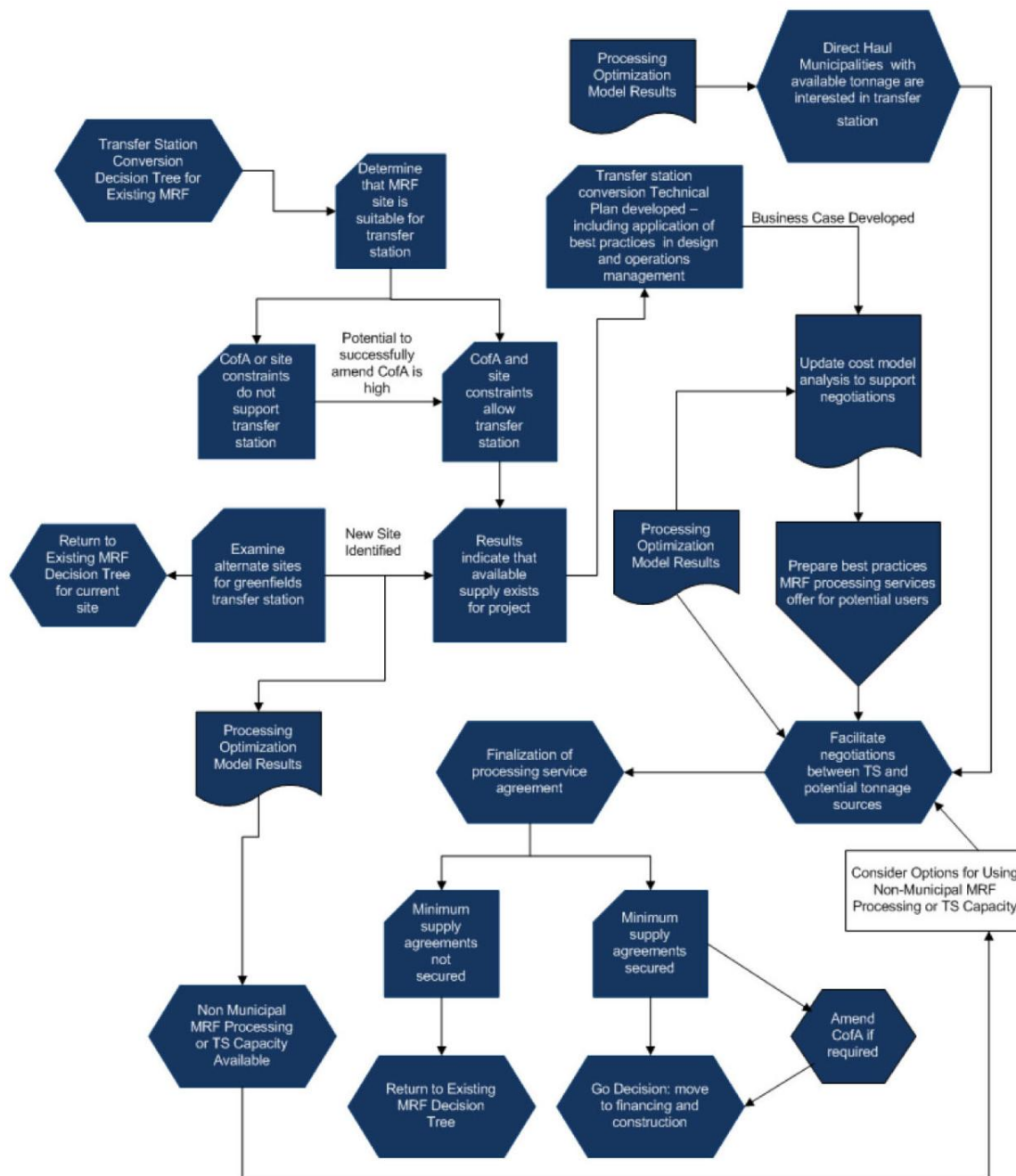
Figure 7 illustrates the road map for a MRF that has been identified as a candidate for conversion to a transfer station (TS) in an optimized Blue Box system.

The process shows a series of decision steps that move through site evaluation, supply confirmation, technical plan development, business case finalization, supply guarantees and go/no-go decision before final design and construction.

First is the initial assessment of the facility's suitability for a TS conversion. If there are insurmountable barriers to the TS conversion then the facility would return to the primary Decision Tree for Existing MRFs for re-evaluation while the a new site was identified for a greenfield Transfer Station project to replace the one under consideration. That new site would then be moved through the decision tree process.

If the existing MRF location is found to be suitable for a TS conversion then the business case for that TS conversion is developed, first by determining that there is available supply for the targeted capacity of the TS conversion project (based on the processing optimization model) which then moving to development of a technical plan for the TS conversion, based on state of the art technology and best practice operations management approaches. This technical plan then moves forward into the pre-development stage where supply is confirmed, likely through negotiations with the communities that could supply their tonnage (via direct haul).

**Figure 7: Transfer Station Conversion Decision Tree for Existing MRF**



This stage includes updating of the Transfer Station cost model for the site, the creation of a best practices business arrangement between the Transfer Station and the supplying communities and the finalization of that recycling transfer service agreement in order to pave the way for the financing, design and build stages of the project. If the minimum supply requirements are met then the facility can move forward with construction. If not, then the facility returns to the Existing MRF Decision Tree again.

The net result, for existing MRFs that successfully move through the Transfer Station Conversion Decision Tree is the development of new recycling transfer capacity that is ready to fill a key role in creating an efficient and cost effective regional hub and spoke Blue Box processing system.

### **2.2.5. Stranded Asset Decision Tree for Existing MRF**

Figure 8 illustrates the road map for a MRF that has not been identified as a candidate for a role in an optimized Blue Box system.

The process shows a series of decision steps that move through site and equipment inventory, explore options for repurposing equipment assets in the optimized Blue Box system, and then pursue options to find alternative uses for these site and/or equipment once they would no longer be part of the Blue Box program, e.g. IC&I material processing.

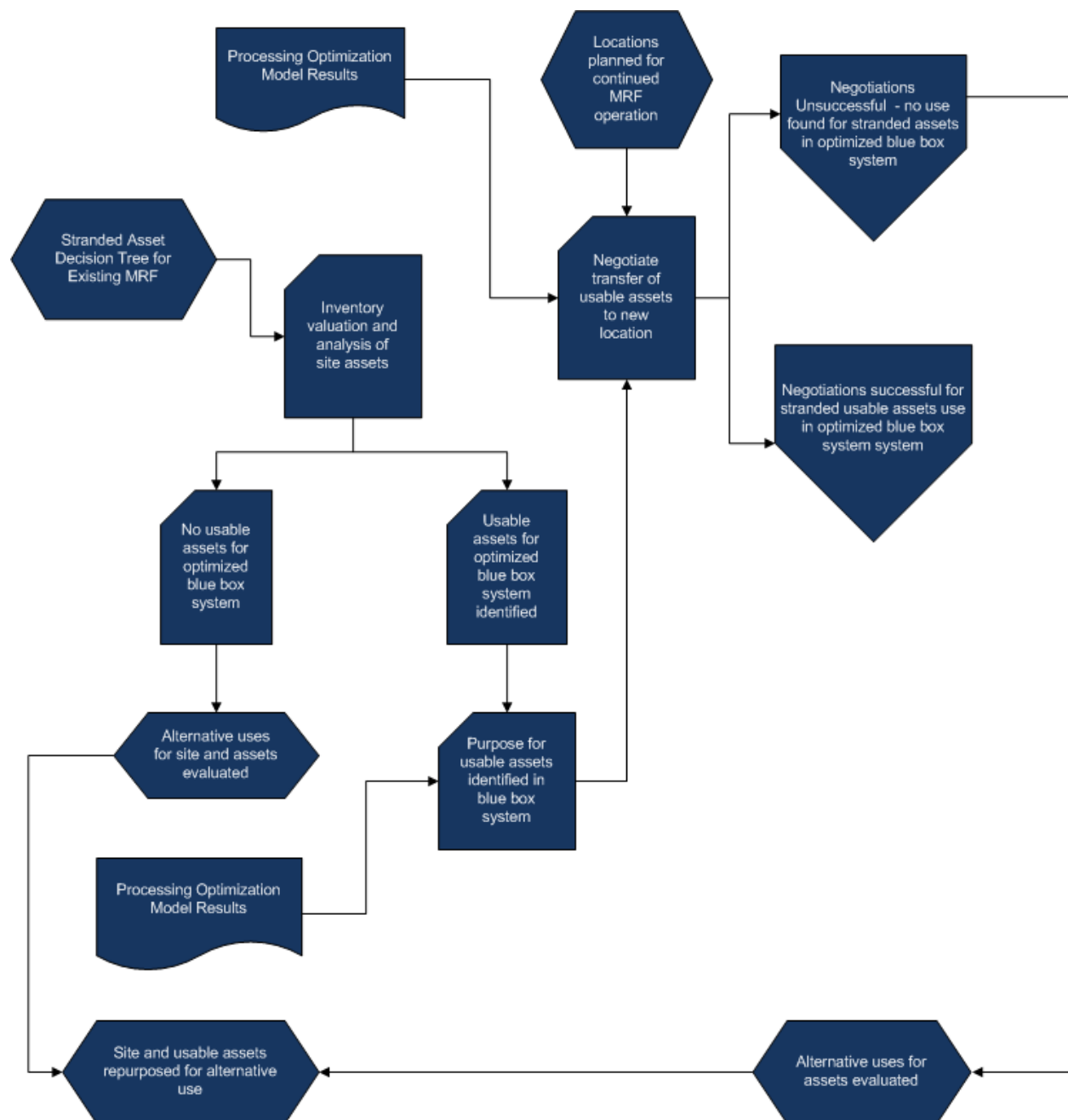
First an initial inventory, valuation and analysis of the site assets, including equipment are undertaken. A determination would be made as to whether any of these assets have potential for use in the optimized Blue Box processing system in upgrades of MRFs or in new complete rebuilds or greenfield MRFs that are part of the system. That determination would be informed partially by output from the processing optimization model as well as consultation with representatives of the potential recipient locations.

If usable assets can be repurposed then negotiations, engineering and business arrangements would be completed to close the deal, if possible, so that these assets can become part of the optimized Blue Box system.

If the negotiations are unsuccessful or if the assets are determined to be unusable in the optimized Blue Box system, then a step will be taken to evaluate alternative uses for the site and equipment to maximize the long term value of the asset for that location, e.g. to process IC&I material. These steps may be undertaken concurrently to identify the preferred use.

The net result, for existing MRFs that are determined to not have a future as part of the Blue Box system will be repurposing either as usable assets in other Blue Box optimization MRFs or as alternative uses to benefit that location.

**Figure 8: Stranded Asset Decision Tree for Existing MRF**





### 2.2.6. Decision Tree Process for Existing Transfer Stations

The following set of decision trees provide a road map for the transition process for existing Transfer Stations (TS).

Figure 9 illustrates the basic outcomes that are likely for every existing Transfer Station in the Blue Box system.

As shown in this decision tree, an existing Transfer Station in the current system may or may not be considered for continued operation in a new optimized Blue Box processing solution. If that Transfer Station is being considered in some role then the future use will depend on the current Transfer Station technology and capacity.

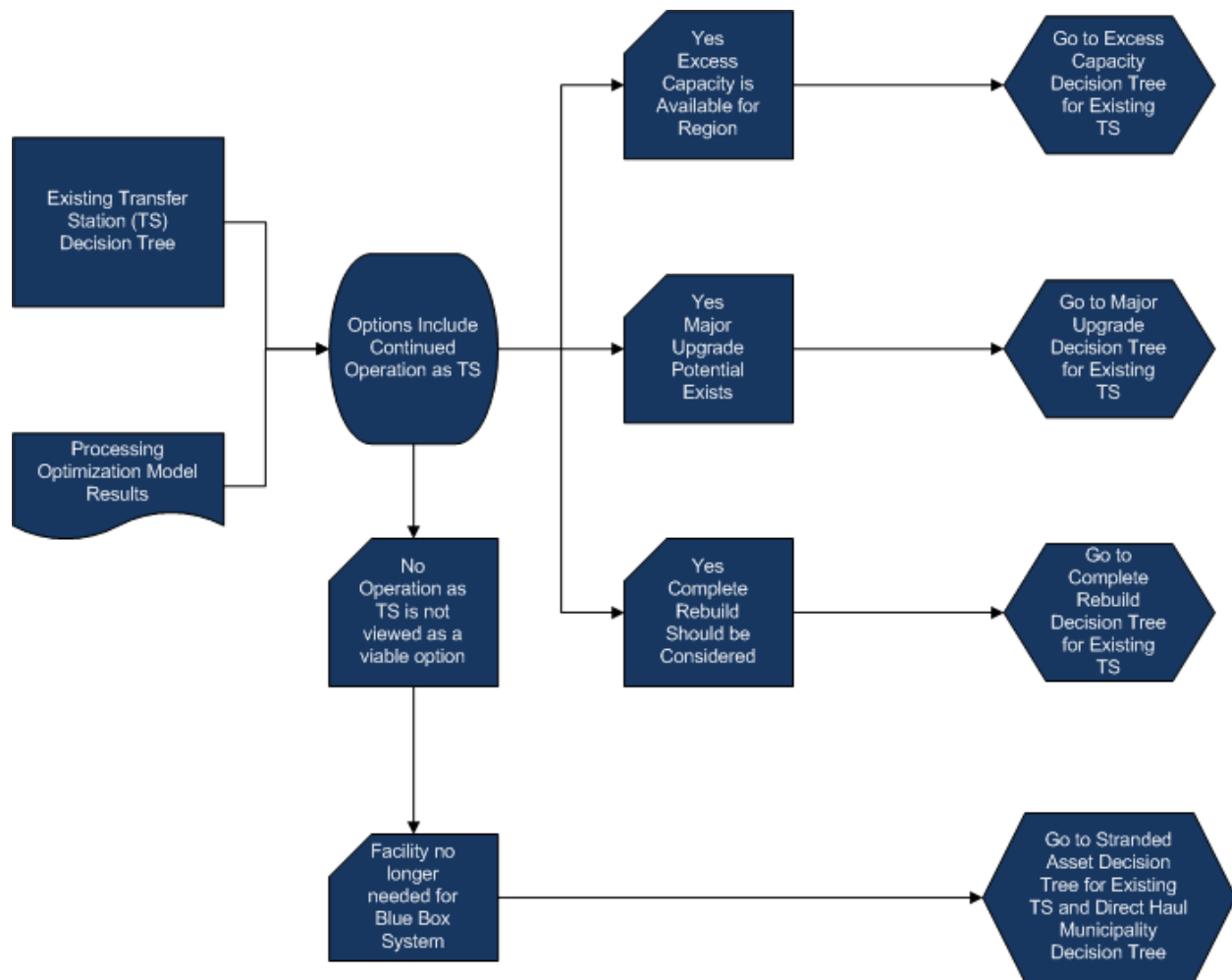
If the current Transfer Stations technology and capacity allow acceptance of additional materials from other communities (delivered via direct haul) then the decision tree directs the process to the “Excess Capacity for Existing Transfer Station” decision tree. If technology or capacity is not up to necessary standards then the process is directed to the “Major Upgrade for Existing Transfer Station” decision tree. If the technology is so limited, or the cost of a major upgrade is a barrier, then the process is directed to the “Complete Rebuild for Existing Transfer Station” decision tree

Alternatively, if service as a transfer station is not on the table then the process is directed to the “Stranded Assets for Existing Transfer Station” decision tree.

In all cases the Blue Box processing optimization model has a continued role in determining the options available to that particular Transfer Station and the applicable decision trees that can serve as a road map for the transition plan for that location.

Following is a detailed description for each of these second tier decision trees for existing Transfer Stations.

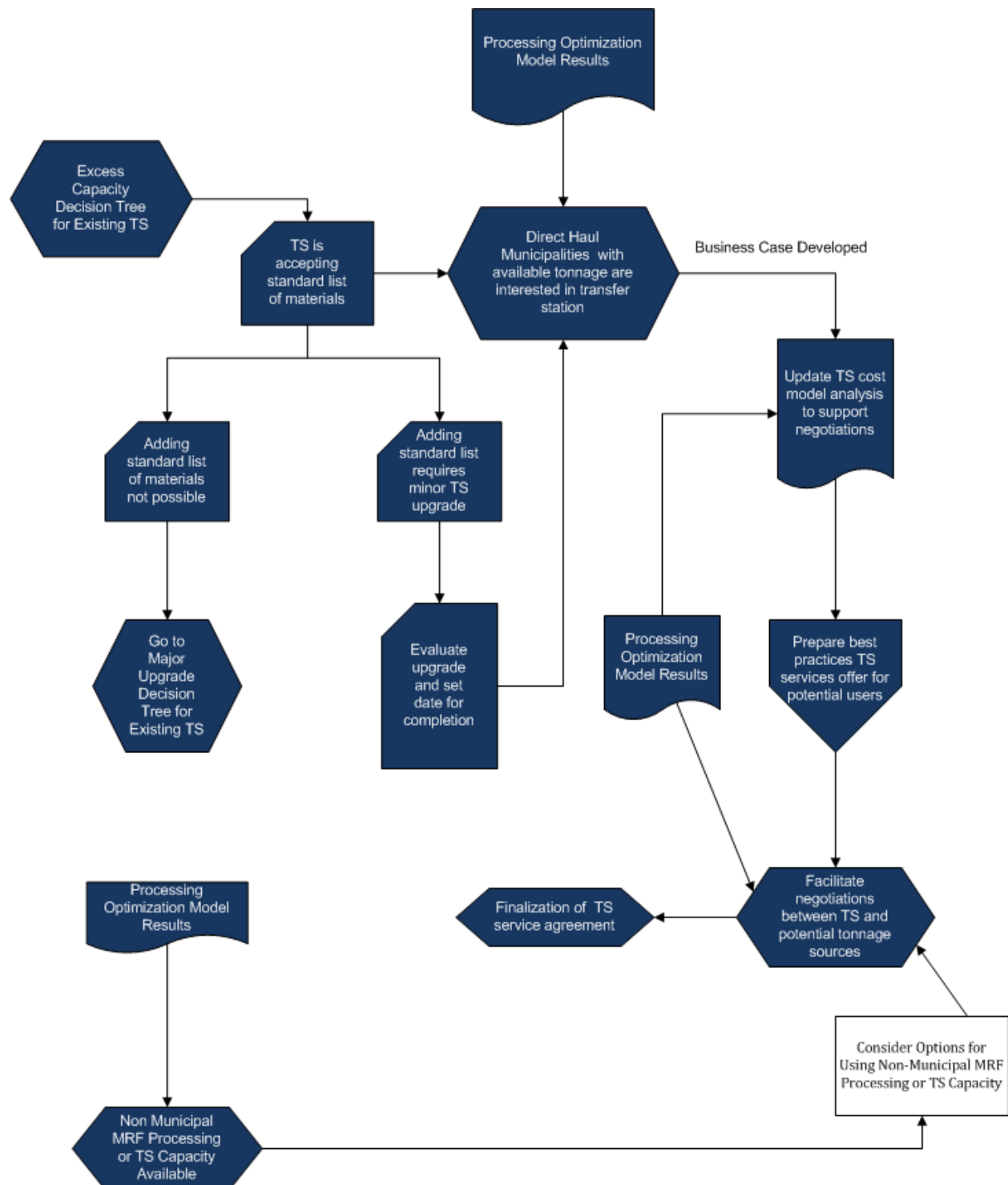
**Figure 9: Existing Transfer Station Decision Trees**



### 2.2.7. Excess Capacity Decision Tree for Existing Transfer Station

Figure 10 illustrates the transition planning process that would serve as a road map for a Transfer Station that has been tagged as a Transfer Station in an optimized Blue Box system and has excess capacity that can be made available for receiving direct hauled recyclables in an expanded “hub and spoke” processing network.

**Figure 10: Excess Capacity Decision Tree for Existing Transfer Station**



The first decision step is the initial assessment of facility's readiness for this new role, e.g. whether the Transfer Station able to accept the standard list of materials. If it is not, and minor upgrades are needed in order to make this possible, then a process is defined for completing that set of minor upgrades. On the other hand, should the Transfer Station not be able to accept the standard list of materials, even with minor upgrades (or meet any other requirement associated with its new role) then that the transition planning process for that facility would return to the primary Decision Tree for Existing Transfer Stations for re-evaluation.

The second stage in the process, as shown in the decision tree, is consideration of available supply sources that could benefit from the available capacity at the Transfer Station, guided by the results of the Blue Box optimization model. The decision tree illustrates the process for negotiating those supply arrangements, following best practices in Transfer Station service arrangements, with the financial arrangements guided by the cost analysis components of the Blue Box processing optimization model.

The net result, for existing Transfer Stations with excess capacity, would be for the facility to realize its optimum "sweet spot" in cost effective and efficient operation – made possible by the higher tonnage feeding into the Transfer Station under the hub and spoke processing model.

### **2.2.8. Major Upgrade Decision Tree for Existing Transfer Station**

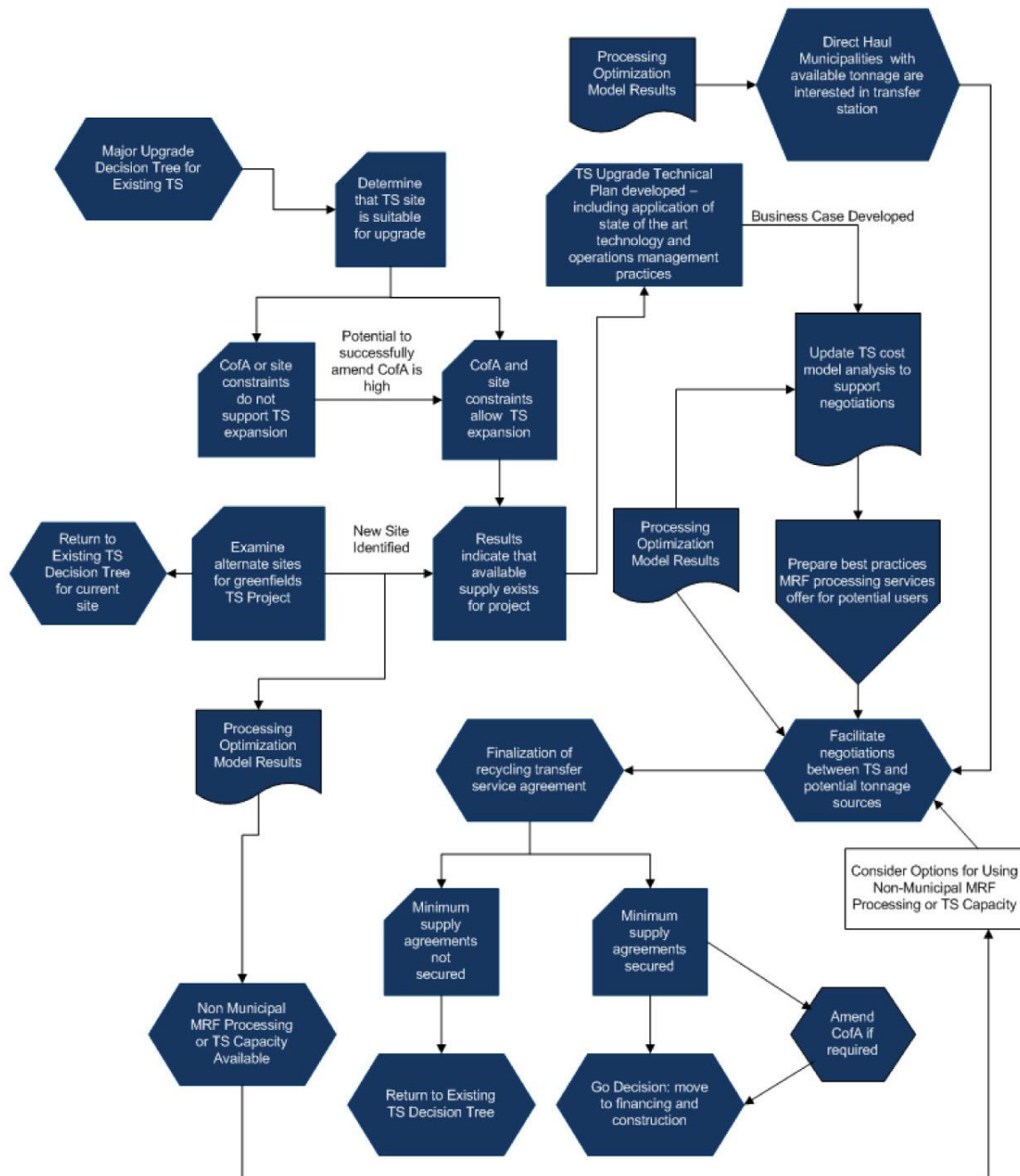
Figure 11 illustrates the transition planning process that would serve as a road map for a Transfer Station that has been tagged as a Transfer Station in an optimized Blue Box system but requires a major upgrade so that it can effectively serve in its new role to receive direct hauled recyclables in an expanded "hub and spoke" processing network.

The first decision step is the initial assessment of the facility's suitability for a Transfer Station upgrade. Does the CofA allow the upgrade, or are there other site or facility constraints that would prevent the upgrade – just a few examples. If there are insurmountable barriers to the upgrade then the facility would return to the primary Decision Tree for Existing Transfer Stations for re-evaluation while a new site was identified for a greenfield Transfer Station project to replace the potential upgrade. That new site would then be moved through the decision tree process.

If the site is found to be suitable for the upgrade then the business case for the upgrade is developed, first by determining that there is available supply for the targeted capacity of the upgrade project (based on the processing optimization model) which then moves to development of a technical plan for the Transfer Station upgrade, based on state of the art technology and best practice operations management approaches. This technical plan then moves forward into the pre-development stage where supply is confirmed, likely through negotiations with the communities that could supply their tonnage (via direct haul).

This stage includes updating of the Transfer Station cost model for the site, the creation of a best practices business arrangement between the upgraded Transfer Station and the supplying communities and the finalization of that recycling transfer service agreement in order to pave the way for the financing, design and build stages of the project. If the minimum supply requirements are met then the facility can move forward with construction. If not then the facility returns to the Existing Transfer Station Decision Tree again.

**Figure 11: Major Upgrade Decision Tree for Existing Transfer Station**





The net result, for existing Transfer Stations that successfully move through the Major Upgrade Decision Tree is the development of a state-of-the-art Transfer Station that is ready to fill a key role in creating an efficient and cost effective regional hub and spoke processing system.

### **2.2.9. Complete Rebuild Decision Tree for Existing Transfer Station**

Figure 12 illustrates the next option for a Transfer Station that has been tagged as a Transfer Station in an optimized Blue Box system. This figure shows the transition planning process for a Transfer Station that requires a complete rebuild so that it can effectively serve in its new role to receive direct hauled recyclables in an expanded “hub and spoke” optimized Blue Box processing network.

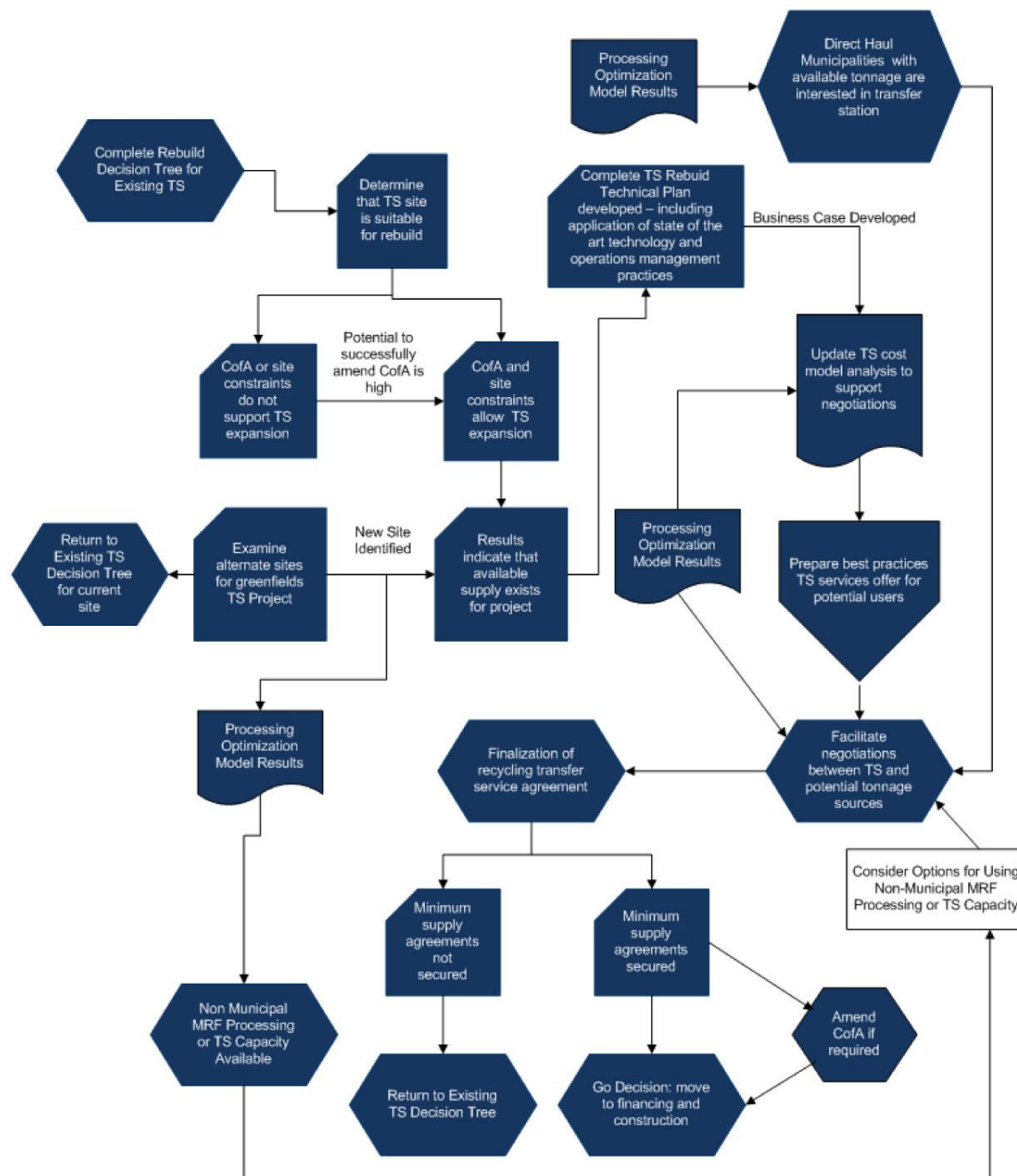
The process shows a series of decision steps that are similar in concept to the Major Upgrade Decision Tree approach. First is the initial assessment of the facility’s suitability for a Transfer Station upgrade. If there are insurmountable barriers to the upgrade then the facility would return to the primary Decision Tree for Existing Transfer Stations for re-evaluation while a new site was identified for a greenfield Transfer Station project to replace the potential completely rebuilt Transfer Station under consideration. That new site would then be moved through the decision tree process.

If the existing Transfer Station is found to be suitable for a complete rebuild then the business case for that rebuild is developed, first by determining that there is available supply for the targeted capacity of the rebuild project (based on the processing optimization model) which then moves to development of a technical plan for the rebuilt Transfer Station, based on state of the art technology and best practice operations management approaches. This technical plan then moves forward into the pre-development stage where supply is confirmed, likely through negotiations with the communities that could supply their tonnage (via direct haul).

This stage includes updating of the Transfer Station cost model for the site, the creation of a best practices business arrangement between the upgraded Transfer Station and the supplying communities and the finalization of that processing service agreement in order to pave the way for the financing, design and build stages of the project. If the minimum supply requirements are met then the facility can move forward with construction. If not then the location returns to the Existing Transfer Station Decision Tree again.

The net result, for existing Transfer Stations that successfully move through the Complete Rebuild Decision Tree is the development of a new state-of-the-art Transfer Station that is ready to fill a key role in creating an efficient and cost effective regional hub and spoke processing system.

**Figure 12: Complete Rebuild Decision Tree for Existing Transfer Station**



### 2.2.10. Stranded Asset Decision Tree for Existing Transfer Station

Figure 13 illustrates the road map for a Transfer Station that has not been identified as a candidate for a role in an optimized Blue Box system.

The process shows a series of decision steps that move through site and equipment inventory, explore options for repurposing equipment assets in the optimized Blue Box system, and then pursue options to find alternative uses for these stranded assets once they would no longer be part of the Blue Box program.

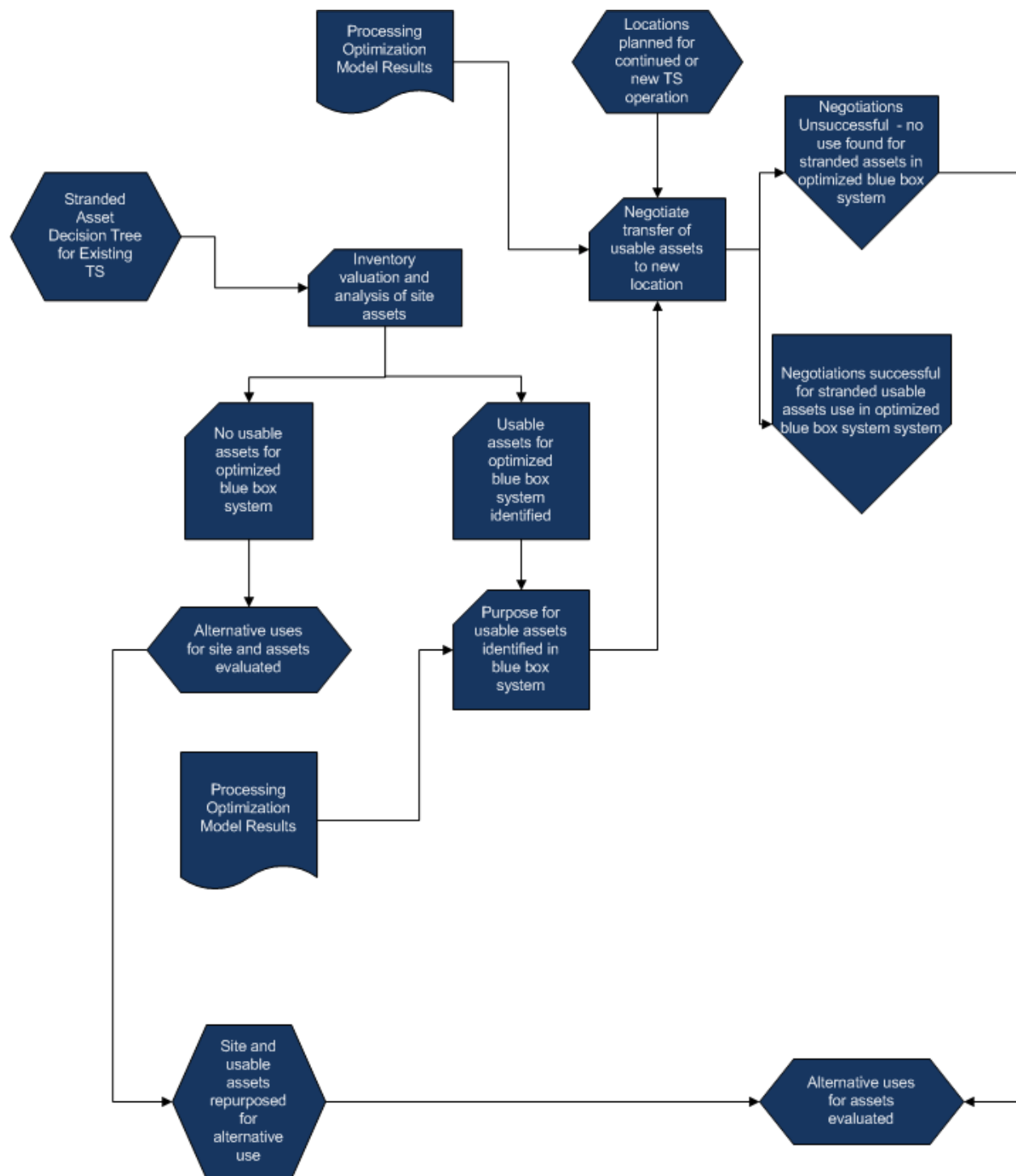
First an initial inventory, valuation and analysis of the site assets, including equipment are undertaken. A determination would be made as to whether any of these assets have potential for use in the optimized Blue Box processing system in upgrades of Transfer Stations or in new complete rebuilds or greenfield Transfer Stations that are part of the system. That determination would be informed partially by output from the processing optimization model as well as consultation with representatives of the potential recipient communities.

If usable assets can be repurposed then negotiations, engineering and business arrangements would be completed to close the deal, if possible, so that these assets can become part of the optimized Blue Box system.

If the negotiations are unsuccessful or if the assets are determined to be unusable in the optimized Blue Box system, then alternative uses for the site and equipment will be evaluated to maximize the long term value of the asset for that facility.

The net result, for existing Transfer Stations that are determined to not have a future as part of the Blue Box system will be repurposing either as usable assets in other Blue Box optimization Transfer Stations or as alternative uses to benefit that location.

**Figure 13: Stranded Asset Decision Tree for Existing Transfer Station**



## 2.3. Decision Tree Process for Greenfield Projects

The following set of decision trees provide a road map for the transition process for development of a greenfield Hub MRF or a greenfield Transfer Station, including the potential role that a host community may play in considering sponsorship of that project.

### 2.3.1. Greenfield MRF Decision Tree

Figure 14 illustrates the road map for a Greenfield MRF project. This project would be initiated at the regional level, but immediately move to a go/no-go decision on whether the host community or host communities would be willing to sponsor the project, provide a site, and/or other consideration to move the project forward. See the “Potential Host Community” entry point into the decision tree. A no-go would result in a search for alternative project sponsors and sites.

As the process model shows, the project would move to a more detailed feasibility stage where available supply is re-confirmed, the technical plan for the project developed, the business case/financial model updated and the basic justification for the Greenfield MRF project finalized. At this stage negotiations for commitments of supply from both transfer stations as well as direct haul municipalities would begin, resulting in a potential go decision followed by a CofA approval process and project financing, design, construction and start-up. Private or non-municipal merchant MRF capability may be an input into this final stage of project feasibility and approval. Failure to bring the project together would return the region to the beginning stage of the Greenfield MRF Decision Tree.

**Figure 14: Greenfield MRF Decision Tree**





### 2.3.2. Greenfield Transfer Station Decision Tree

Figure 15 illustrates the road map for a Greenfield Transfer Station project. This project would be initiated at the regional level, but immediately move to a go/no-go decision on whether the host community or host communities would be willing to sponsor the project, provide a site, and/or other consideration to move the project forward. See the “Potential Host Community” entry point into the decision tree. A no-go would result in a search for alternative project sponsors and sites.

As the process model shows, the transfer station project would move to a more detailed feasibility stage where available supply is re-confirmed, the technical plan for the transfer station developed, the business case/financial model updated and the basic justification for the Greenfield Transfer Station project finalized. At this stage negotiations for commitments of supply from direct haul municipalities would begin, resulting in a potential go decision followed by a CofA approval process and project financing, design, construction and start-up. Private or non-municipal merchant transfer station and/or MRF capability may be an input into this final stage of project feasibility and approval. Failure to bring the project together would return the region to the beginning stage of the Greenfield Transfer Station Decision Tree.

Figure 15: Greenfield Transfer Station Decision Tree

