Cranberry Islands Ferry Operations and Financial Feasibility Report

Prepared For: **Town of Cranberry Isles**

Prepared By: **Norris &Norris Associates**

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Cranberry Islands Ferry Operations and Financial Feasibility Report

Report Outline

Chapter 1. Findings

Executive Summary:

The Town of Cranberry Isles has long relied on scheduled passenger ferry and freight service to serve the year round and seasonal residents as the primary transportation link to Mount Desert Island. A safe, reliable, affordable and sustainable ferry connection serves as the Town's lifeline to the mainland, as is the case with Maine's other year round island communities. Barge and landing craft services are also essential, but are provided on call by multiple operators. The Town has been well served by a primary year round passenger operator and several seasonal ferry operators for many years.

Recently, however, there have been concerns that the year round service needed improvements and that the service might be closing down. In response to the situation, in 2014 the Town's Board of Selectmen (BOS) formed a Transportation Task Force (TTF) as a subcommittee of the Municipal Advisory Commission (MAC) to study the service and recommend improvements that could be made permanent.

The TTF conducted a survey of ferry service needs, during the summer and fall of 2014. After analyzing the responses of 190 towns-people and ferry users to a questionnaire the Task Force with consulting assistance from water transportation specialist Charles Norris, identified possible management models of service. These were presented to the town in two public hearings during the summer of 2015, followed by more detailed analysis of routes, schedules, vessels, dock infrastructure, and financial models. On the basis of this work, the TTF makes the following recommendations to the BOS via the MAC.

Recommended Ferry Service Summary

The passenger ferry service should be consolidated as a single operation, under contract to the Town, with the designated ferry provider running all year round and seasonal passenger and hand freight service connecting the islands of Great Cranberry, Islesford, and Sutton, to the mainland at Northeast Harbor (NEH) and Manset in Southwest Harbor (SWH). After deliberation, it was recommended that the provision of essential barge or landing craft operations for vehicles and larger freight needs should remain as a separate private service by multiple operators.

New Service Management Options: The Town needs to decide on one of three possible management options for a single passenger ferry operator recommended by the TTF for Town consideration:

- A Town owned service (docks, vessels, freight contracts and subsidies) with a provider contracted for operations;
- A Town franchise with a designated single for-profit private service provider with operational requirements and subsidy grants;

- A Town franchise with a single designated non-profit provider with operational requirements and subsidy grants, similar in concept to the current Isle au Haut and Chebeague services.

Operations Requirements: The operations contract for the designated single operator would include:

A. Exclusive assigned docking rights for the passenger ferry service to land and depart at TCI, based on a recommended revised Docking Ordinance being developed by TCI.
B. A financial subsidy, currently estimated at approximately $125,000, which would include:
   1. a Commuter Subsidy (ME-DOT)
   2. a TCI subsidy match as part of the Commuter Service agreement
   3. a portion of the TCI School Transportation Budget
   4. The USPS Mail Contract (if possible)
   5. Other subsidies from public and private entities.
C. Agreements for long term landing rights in NEH, and/or SWH (upper) that will meet the Town's needs during summer and winter seasons.
D. Requirements of the operation, including, route plan, vessel requirements, fare levels, and accountability structure as specified in the report of the task force.

New Routes: The TTF also recommends consolidated routes for more reliable and efficient services. A consolidated route is proposed for the summer and shoulder seasons, connecting from Northeast Harbor through Islesford and Great Cranberry to Manset (and reversing back to NEH), with on-call stops at Sutton during the summer months. This would combine the two separate summer triangle routes now operating. (See maps following this page and described in more detail in Chapter 2)

During the winter months only the triangle service would operate from NEH to TCI, as long as landing rights can be secured, or otherwise a triangle to SWH upper. The proposed summer consolidated or U-route, with reversing direction runs, can provide greater frequency of departure choices to and from each island with fewer vessels and crews than the current multiple operator system. During peak summer season times, there may also need to be a scheduled hand freight only service, to avoid lengthy unloading layovers in order to maintain overall schedules.

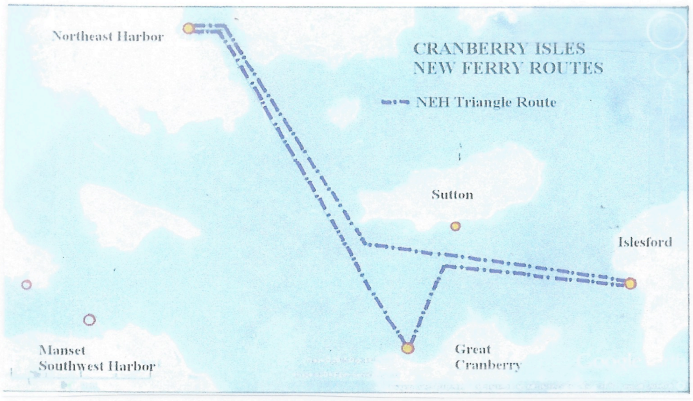
Vessel Needs: The vessels needed for the consolidated routes would have a minimum capacity of 49 passengers. In order to complete the new consolidated route and the winter triangle route in a shorter time, the designated operator would need to provide either; 1) a new 18-knot ferry with a refitted used 15-knot back up, or 2) two refitted used 15-knot vessels as a transitional service. The 15-knot vessel would be 50 %faster than the existing vessel speeds of 10 knots or less, and can complete the proposed routes in about an hour, while the preferred 18-knot vessel would be 80% faster and able to complete the routes in about 55 minutes.

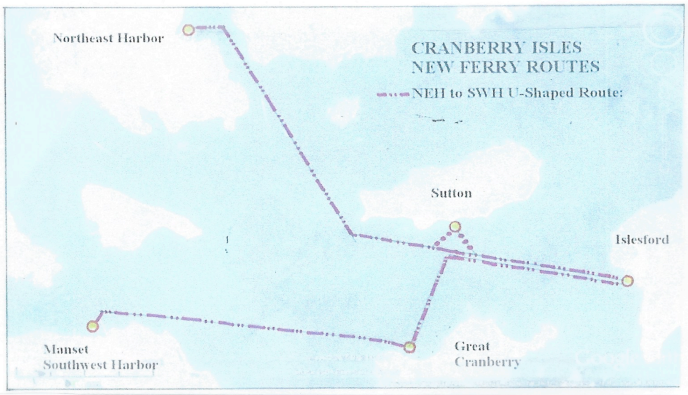
The primary objective would be to require a purpose designed new vessel to address local navigation and weather conditions within 4 years of the contract award to assure a sustainable long-term service.

Financial Model Feasibility: Three financial models were considered based on the above-described route and management recommendations, to test the feasibility of different vessel combinations including:

I. Two refitted used 15-knot vessels;
II. One new 18 knot and one refitted used 15-knot vessels,
III. One new 21-knot and one new 15-knot vessel.

The following maps describe the major new ferry routes described on page 2 of this Chapter 1. "Findings," and in more detail in Chapter 2 "Route Operations Analysis"





Assumptions for the models that followed preferences from the surveys and workshops included:

- Passenger demand remains similar to the to the present
- Current fare structures
- Continued subsides and ongoing landing fees at NEH and SWH
- Inclusion of hand freight
- Barge freight as separate service

The summary table compares the financial models.

Financial Model Profit or Loss by Model with Varying TCI Grant and Fare Levels

Action Plan Phase	Operating Costs/Yr	Operating Revenues/Yr	TCI Grants & Subsidies/Yr	Annual Profit or (Loss)
Model I; 2 Existing Vessels @$450,000.00	($589,900.00)	$536,100.00	$126,000.00*	**$72,200.00***
				+12.2%
			$156,000.00**	**$102,200.00****
				+17.3%
Model II: 1 New+ 1 Existing Vessel @ $1,075,000.00	($698,800.00)	$536,100.00	$126,000.00*	**(-$36,200.00)**
				19.1%
			$156,000.00**	**($-6,200.00)**
				(-1.0%)
A) with added subsidy only			+ $69,300.00	**+ $69,880**
				+10%
B) with added subsidy and higher fare revenue		+ 34,650.00	+ 34,650.00	**+ $69,880**
		+6.5%		**+10%**
C) with fare increase only		69,300.00		**+ $69,880**
		+13%		**+10%**
Model III: 2 New Vessels @$1,900,000.00	($787,500.00)	$536,000.00	$126,000.00*	**(-$125,500.00)**
				(-15.9%)
			$156,000.00**	**(-$95,500.00)**
				(-12.1.8%)
A) with added subsidy only			$174,200.00	**$78.800.00**
				+10.0%
B) with added subsidy and higher fare revenue		$87,100.00	$87,100.00	**$78.800.00**
		+16.2%		**+10.0%**
C) with fare increase only		$174,200.00		**$78.800.00**
		+32.4%		**+10.0%**
* current TCI grants **with increased MDOT $/USPS				

Feasibility findings by option can be summarized:

Model I: Two refitted used 15-knot vessels: This model appears to be profitable within the current fare and subsidy structure. The use of used vessels may be acceptable for the short or transition term. However, finding used vessels for a specified start-up is dependent on the used vessel market, and often results in less suitability for prevailing year round navigation and weather conditions, and may not meet all user needs. The 15-knot plan would only be recommended as a short-term transition solution and would not meet the longer-term sustainability objective.

Model II: One new 18 knot and one refitted used 15-knot vessels: A new 18-knot vessel would be designed specifically for the TCI conditions and needs. The faster vessel would be able to complete more trips per hour and would be designated for primary service, with the 15-knot used vessel serving as the secondary summer vessel, and winter back up. The considerably higher cost of the new vessel would require a manageable increase in total revenue for system profitability, with a combination of increased grant levels and selected summer season fare rates.

Model III: One new 21-knot and one new 15-knot vessel: The construction of a higher speed, purpose built 21-knot primary vessel would more than double current ferry vessel speed and result in shorter round trip times. Added construction of a new 15-knot back-up vessel would be ideal for the long term, guaranteeing that both vessels were well suited to the TCI routes and would have long useful operating lives. However, the added annualized capital expense of nearly double that of Model II, would require much higher revenues, with substantial increases in year round fare levels and subsidy grants. For these reasons, Model III does not appear to be as feasible as I and II.

Implementation Plan and Next Steps:

Preparing a final Implementation Plan and RFP for a Town ferry franchise for a consolidated service depends on several Town decisions.

March 2016. Town adopts or does not adopt the Recommended Plan. If the Town does not adopt the Recommended Plan, the ferry service continues according to whatever private operations are current at the time, and future multi-operator services that may be offered.

March 2016 – October 2016. If the Town adopts the Recommended Plan, the following steps may be followed.

March – May:
The Town finalizes the Recommended Plan decisions and needed agreements for a new service.

- Town develops a Harbor Ordinance and conducts public hearings on the same.
- TCI Selectmen approach Town of Mt. Desert (TMD) to change their Harbor Ordinance to allow a town-to-town passenger service. If agreements cannot be made for an NEH landing, a similar request would be made to SWH for a protected winter landing commitment.
- BOS and MAC work to secure additional financial subsidies.
- Town selects a Service Management option.
- MAC prepares a more detailed Implementation Plan based on the Harbor Ordinances and agreements with NEH or SWH.

June - August 2016:
Town finalizes Implementation Plan for consolidated service.

- Special Town Meeting to vote on Harbor Ordinance.
- Write and issue Request for Proposals (RFP) for contract for ferry service operation.
- Receive and review proposals for ferry service operations contract.
- Award service contract. November 2016. New TCI ferry service starts operation.

2. ROUTE OPERATIONS ANALYSIS

2.1 Seasonal Ferry Routes and Landings:

There are generally four operating seasons for TCI ferries, based on seasonal variations in demand as well as changing wind and weather operating conditions:

- 1) Peak Summer Season – end of June through Labor Day
- 2) Fall Shoulder Season – Labor Day through October 31
- 3) Winter Season – November 1 through April 15
- 4) Spring Shoulder Season – April 16 through end of June.

General characteristics affecting schedules and frequency of service include the following:

- The greatest volume for general passenger and freight demand is during the summer season, with secondary volume demand during fall and spring shoulder seasons.
- Winter season passenger service requires specific schedule times for year round residents including students and commuters, as well as for shorter daily mainland visits.
- Based on surveys, the current number of trips and vessel capacity seems to match demand levels, including during peak summer months. Flexibility for adding passenger and freight trips at peak use times would be desirable.
- Scheduling capability to serve Sutton Island during peak summer months is needed, but may require altering the landing location and approach.
- Hand freight in peak season sometimes conflicts with passenger use during the busiest periods around weekends, requiring longer layovers and affecting schedule reliability. Designated freight only trips may need to be scheduled for low usage periods. Some perishable goods may still need to be handled during peak use periods.
- Barge freight is year round but generally on call. Peak use periods can vary but often occur during summer and shoulder seasons. Heavy construction activity periods can result in more frequent trip demand. Less frequent, but more critically needed service is during the winter months when fuel delivery and storm response are needed.
- Barge operators generally service multiple islands and shore locations around MDI in addition to the Cranberry Isles, in contrast to the passenger and hand freight ferry system which only serves TCI.

2.2 Vessel Assumptions for Route Analysis:

For passenger, hand freight and mail service, several combinations of used (existing) and new vessel options were initially considered:

- Existing TCI monohull (10 knot, 49+ passenger, ~45 feet)
- New or used monohull (15 knot, 49 passenger, ~45 foot),
- New monohulls (18 knot 49 -65 passenger ~45-50 foot),
- New monohull or catamaran (21 knot, 49 -65 passenger, ~ 50 foot).

It is preferable to have new, faster, more maneuverable vessels. Slower, higher maintenance restored used vessels may be useful in transition or as back-up vessels, but would not be recommended as long term primary vessels.

For heavy freight and vehicles, barges and roll-on roll-off landing craft vessels come in various sizes, and generally don't carry passengers (MDOT ferries are an exception). Landing craft type vessels need to be able to navigate existing ramps at GCI and Islesford.

2.3 Route Descriptions and Characteristics by Season

2.31 Route Descriptions: Several options for scheduled routes (passenger, mail and hand freight) were considered to address varying seasonal wind and weather conditions as well as differing demands for peak and off peak periods. Additional route options considered but found infeasible are described in Appendix 2. The following options were considered as useful for future TCI routes:

1) Triangular winter and non-winter service from Northeast including:
- Northeast to Islesford to GCI to Northeast;

2) Triangular non-winter service from Manset including
- Manset to Islesford to GCI to Manset;

3) "U" Shaped Routes /Multi-point non-winter service connecting all four island and mainland landings (without NE to Manset connection).
- **3A** Northeast to Islesford to GCI to Manset;
- **3B** Manset to GCI to Islesford to Manset (same route as 3A reversed).

2.32 Travel Time Options: Each route was then modeled for route travel times for the 4 vessel speed options described. The route travel time option analysis includes the following assumptions:
Options include the following:

- Loading /unloading/docking average time per stop at: 5 minutes (Option A), 8 Minutes (Option B), and 10 minutes (Option C)
- Landing approach at of 5 knots at an average 0.2 nm per approach
- Cruising speed distance = total distance minus approach distances
- Slack time is extra schedule time per round trip; varies and increases based on route distance

Table 2.1: TCI Ferry Route Option Travel Time Summary Table (020216)

Option A - With 5 minute average load/unload times;

Route Option		Route Leg Time/ Distance Elements			Vessel Cruising Speed Travel Times				Slack and Total Time by Route and Vessel			
#	Route	load/ unload	5 kt appro.	cruise dist.	10 knot	15 knot	18 knot	21 knot	10 knot	@ 15 kts	@ 18 kts	@ 21 kts
1.	**NE Triangle Route**	5 min x 2	04 nm x 3		10 + 15							
	NE – GCI - Isles – NE	10 m.	1.2nm	6.0nm	+36 = 61 min	+24 = 49 min	+ 20 = 45min	+17 = 42 min	**+ 4= 65 min**	**+1= 50 min**	**+3 48 min**	**+5 45 min**
2.	**SW Triangle Route**	5 min x 2	04 nm x 3		10 + 15							
	SW – GCI – Isles - SW	10 m.	1.2nm	5.9 nm	+36 = 61 min	+24 = 49 min	+20 = 45 min	+17 42 min=	**+ 4 = 65 min**	**+1= 50 min**	**+3 48 min**	**+5 45 min**
3.	**U-ShapeRts w/o NE-SW link**	5 min x 2	0.4nm x 3		10+ 15							
3A	NE – Isles – GCI - SW	15m.	1.2nm	5.5nm	+33= 58 min	+22= 47 min	+18= 43 min	+16= 41 min	**+2= 60 min**	**+3= 50 min**	**+2= 45 min**	**+2= 43 min**
3B	SW - GCI - Isles -NE	15m.	1.2 nm	5.5nm	+27= 58 min	+22= 47 min	+18= 43 min	+16= 41 min	**+2= 60 min**	**+3= 50 min**	**+2= 45 min**	**+2= 43 min**

Table 2.2: TCI Ferry Route Option Travel Time Summary Table (020216)

<u>Option B</u> - With 8 minute average load/unload times;

Route Option		Route Leg Time/ Distance Elements			Vessel Cruising Speed Travel Times				Slack and Total Time by Route and Vessel			
#	**Route**	**load/ unload**	**5 kt appro.**	**cruise dist.**	10 knot	**15 knot**	**18 knot**	**21 knot**	**10 knot**	**@ 15 kts**	**@ 18 kts**	**@ 21 kts**
1.	**NE Triangle Route**	8 min x 2	04 nm x 3		16 + 15							
	NE – GCI - Isles – NE	16m.	1.2nm	6.0nm	+36= 67 min	+24 = 55 min	+ 20= 51 min	+17 = 48 min	**+ 8 = 75 min**	**+5= 60 min**	**+4 55 min**	**+2 50 min**
2.	**SW Triangle Route**	8 min x 2	04 nm x 3		16 + 15							
	SW – GCI – Isles - SW	16 m.	1.2nm	5.9 nm	+36= 67 min	+24 = 55 min	+ 20= 51 min	+17 = 48 min	**+ 8 = 75 min**	**+3 60 min**	**+4 55 min**	**+2 50 min**
3.	**U-Shape Routes w/o NE-SW link**	8 min x 2	0.4nm x 3		16+ 15							
3A	NE – Isles – GCI - SW	16m.	1.2nm	5.5nm	+33= 64 min	+22= 53min	+18= 49 min	+16= 47 min	**+6= 70 min**	**+5= 58 min**	**+5= 55 min**	**+2= 50 min**
3B	SW - GCI - Isles -NE	16m.	1.2 nm	5.5nm	+33= 64 min	+22= 53 min	+18= 49 min	+16= 47 min	**+6= 70 min**	**+5 58 min**	**+5= 55 min**	**+2= 50 min**

Table 2.3: TCI Ferry Route Option Travel Time Summary Table (020216)

<u>Option C</u> - With 10 minute average load/unload times;

Route Option		Route Leg Time/ Distance Elements			Vessel Cruising Speed Travel Times				Slack and Total Time by Route and Vessel			
#	**Route**	**load/ unload**	**5 kt appro.**	**cruise dist.**	**10 knot**	**15 knot**	**18 knot**	**21 knot**	**10 knot**	**@ 15 kts**	**@ 18 kts**	**@ 21 kts**
1.	**NE Triangle Route**	10 min x 2	04 nm x 3		16 + 20							
	NE – GCI - Isles – NE	20 m.	1.2nm	6.0nm	+36 = 72 min	+24 = 60 min	+ 20= 56 min	+17 = 53 min	**+ 3 = 75 min**	**+5= 65 min**	**+4 60 min**	**+2 55min**
2.	**SW Triangle Route**	10 min x 2	04 nm x 3		16 + 20							
	SW – GCI – Isles - SW	20 m.	1.2nm	5.9 nm	+36 = 72 min	+24 = 60 min	+ 20= 56 min	+17 = 53 min	**+ 3 = 75 min**	**+5= 65 min**	**+4 60 min**	**+2 55 min**
3.	**U-Shape Routes w/o NE-SW link**	10 min x 2	0.4nm x 3		16+ 20							
3A	NE – Isles –	20 m.	1.2nm	5.5nm	+33=	+22=	+18=	+16=	**+6=**	**+2=**	**+1=**	**+3=**

	GCI - SW				69 min	58 min	54 min	52 min	**75 min**	**60 min**	**55 min**	**55 min**
3B	SW - GCI - Isles -NE	20 m.	1.2 nm	5.5nm	+33= 69 min	+22= 58 min	+18= 54 min	+16= 52 min	**+6= 75 min**	**+2= 60 min**	**+1= 55 min**	**+3= 55 min**

2.33 Analysis Findings by Route for Existing and New Vessels: The route travel times provide the basis for assessing optional scheduled service by season, and number of vessels needed for various options. Findings by route to be considered in scheduling models include the following.

1) Triangular winter and non-winter service from Northeast: Triangular services from NE are currently run during winter and non-winter periods including on-call service to Sutton. Such services currently provide passenger, hand freight and mail service year round and connect the NE parking to the islands. Round trip times vary by speed and layover time with the 60 minute or under trip cycle being favorable for scheduling purposes. The proposed triangle can be reversed on alternate trips (i.e. NE to GCI to Islesford to NE) to equalize travel time from the main islands. This option differs from the current route, which traditionally has included two stops at GCI and one at Islesford on each round trip.

- A trip cycle time of more than 60 minutes is required for: 1) all existing 10 knot triangle trips, and 2) the used 15 knot triangle trips with a 10 minute stop time.
- A trip cycle time of 60 minutes or less is required for all other 15 knot, 18 knot or 21 knot triangle trips.

2) Triangular non-winter service from Manset: Can only be used only during non-winter periods because of dock exposure at Manset. The current route includes stops on some scheduled trips at the SWH upper landing. While this additional stop can be included as schedule time permits, it hasn't been included in the current triangular schedule. There are similar advantages (to the NEH triangle) for reversing direction on alternative runs to equalize travel times to and from the islands. Trip cycle times for the Manset triangle are the same as for the Northeast triangle described above.

3) "U" Shaped/Multi-point service connecting all four island and mainland landings: The route would connect all points including on-call service to Sutton during non-winter months. NE and Manset would be connected via the Cranberry stops. The U-route would allow for the consolidation of the two separate triangular routes now operating, with only one vessel needed for the combined service to complete the cycle in 60 minutes or less for all loading time options. The NE to Manset link would allow for a single vessel to provide clockwise and counter clockwise service, by simply reversing direction after completing each run.

4) Options for Improving Peak Summer Season Service to Sutton Island: Assuming that there will be an improved landing site as planned at Sutton, and more consistently maneuverable vessels, a needed on- call service can be provided at Sutton Island during the summer and fall months on an on call basis for designated but not all scheduled trips. The designated trips would be those that were typically not at capacity with riders and hand freight. For either the triangular or U-shaped routes New and faster vessels would be better able to add on-call stops than used 15 knot vessels, as they will have shorter cycle times and more flexibility.

- Estimated added time for a Sutton Stop; The added stop would require approximately an extra 15 minutes, assuming a 5 minute stop.

- On-call service for specified trips: The operator will be able to identify those summer season trips that are considered off-peak and are generally the least in demand by passengers and hand freight as those trips will require less loading and unloading. There may be gaps in the schedule with layover time between runs that would allow some trips to absorb the extra 10 minutes. In addition, higher vessel speed capability, such as an 18 knot new vessel, will allow for shorter cycle time and therefore have ability to absorb the extra 10 minutes when needed

2.4 Recommended Ferry Schedule Options for Used and New Vessels

A short list of recommended schedule options tests the most efficient route and vessel combinations. The schedules are based on the current numbers of trips per day by season, and general times of departure from Manset and Northeast. The recommended schedules are intended to make the routes more efficient, while also adding increased service during the summer months. Service levels for the shoulder and winter periods when demand is dramatically less, are kept at or near current levels.

Schedule options all assume the following:

- Consolidated single operator service, rather than multiple operators.
- U-shaped routes (NEH, Islesford, GCI, and SEH/Manset) during summer and fall seasons and triangular service from NEH (NEH, GCI, and Islesford, back to NEH) during winter and spring seasons.

Schedule options with new and/or used vessels include:

- Option A with two used 15 knot vessels,
- Option B with one new 18 knot vessels and one used 15 knot backup,
- Option C with one new 21 knot vessel with a used15 knot backup.

The schedule options are designed to offer at least the same number of trip departures from NEH, Manset, GCI and Islesford as were offered by the multiple operators for the 2015 seasons. Detailed schedules for each option and season are shown in the Appendix in section 2.

2.4.1 Schedule Option A. Used vessel 15 knot speed: This model would include 2 used 15 knot vessels allowing for a gradual transition to 1 new faster vessel. The backup vessel would be used for supplemental peak period trips needed for the summer season. Use of existing vessels assumes that financing a new vessel may take several years after implementation of a consolidated single operator service. The combining of current separate triangular routes into a single "u" shaped route can result in more efficient and cost effective operations with reduced crew demands, lower total fuel consumption, and fewer vessel engine hours from current multi-operator levels.

A1. Summer Peak (June (last week) to September (first week): Two used15 knot 49 passenger vessels. Summer load/unload time would be 8 minutes at each stop for off-peak periods, and 10 minutes per stop for peak periods to allow for added hand freight and passenger demand. An average of 2 crews per day will be needed. If a supplementary hand freight service is needed, it could be provided by using the back-up vessel at a scheduled off-peak mid-morning or mid-afternoon time, with no passengers. Sutton service would be offered on an on-call basis during the summer season for designated off-peak morning and afternoon trips. All routes would be the "u"-shaped route from NEH to Manset and back, except for early and late trips which would be triangles from NEH to NEH.

- 9 departure trips per weekday from NE (including commuter and mail trips); 6 departure trips per weekday from Manset; 13 hour operation:
- 7 departure trips Saturday and Sunday from NE (includes mail); 5 departure trips Saturday and Sunday from Manset; 12 hour operation

- 2 on- call stops at Sutton all days; one AM and one PM.

Schedule Option A1.1: Summer Weekday (1 vessel); One used 15 knot Vessel (with one used 15 knot backup), 8to 10 minute average stops, 58 minute U- route cycle (NEH to Manset or Manset to NEH) and a 60 minute triangle route cycle from NEH to NEH at beginning and end of day.

(*) Doesn't run on Saturday or Sunday, (b) backup vessel, (S) Sutton, (L) layover

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM					
					7:00*	7:25					8:23
						8:30b					9:28b(S)
8:30					9:28	10:00					10:58
10:25b(S)					11:43b						
11:10					12:08	12:30					1:28 PM
1:35 noon					2:33 PM	2:40					3:38
						4:00b*					4:58b*
4:05(S)					5:25(S)	5:35					
5:10b*					6:08b*	6:15b*					
					6:35L						
					7:15bL*						

A2. Spring/Fall Shoulder Season ((Fall – (Sept. Labor Day Through October 31; Spring - May 1 through June last week) Requires one existing 12 knot 49 Passenger primary and one 12 knot 49 passenger backup vessel with an average 2 crews per day. The routes would be the alternating U –shaped runs starting from NEH, going through the islands to Manset and then reversing back through the islands to NEH.

- 6 U-route departures per day on weekdays from NE (includes commuter and mail); and 4 departure trips per day from Manset; 12 hour operation
- 4 U-route departure trips per day from NEH and 3 departures per day from Manset on Saturday and Sunday; intermittent 10 hour operation.

Schedule Option A1.2: Spring Fall Weekday (1 vessel); Existing Vessel (12knot), 5 minute stop, 55 minute route cycles, and a 58 minute triangle route cycle from NEH to NEH at beginning and end of day.

(*) Doesn't run on Saturday or Sunday, (b) backup vessel, (L) layover

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM					
					7:00*	7:30					8:28
9:00					9:58	11:00					11:58
12:10PM					1:08	2:00					2:58
						3:00b*					3:58b*
3:10					4:08	4:35					_
4:10b*					5:08b*						
					5:33L						

Note: If demand is sufficient, some added services could be provided with backup vessel during the months of September and June.

A3. Winter Season (Nov. 1 to April 30): One existing 49 passenger vessel with 2 crews and a backup 49 passenger vessel. Stops would be for 5 minutes. Weekday and weekend triangular service would be to and from NEH only.

- 4 trips per day from NEH on Monday through Friday; intermittent 12 hour operation
- 3 trips per day from NEH on Saturday; intermittent 9 hour operation
- 1 round trip per day from NEH on Sunday; 1 hour operation

Schedule Option A1.3: Winter (1 vessel) NEH Triangle only); Existing Vessel (12knot), 5 minute stop, 58 minute route cycles;

(*) Doesn't run on Saturday or Sunday, (**) Doesn't Run Sunday, (***) Runs Saturday and Sunday Only

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM		6:20*		6:30*	
					6:58*	8:00**		8:35		8:25	
					8:58	12:00**		12:40		12:25	
					12:58	(3:30)***PM		(3:50)		(4:05)	
					(4:28)***						

						4:30** PM		5:15		5:05	_
					5:28						

2.4.2 Schedule Option B. New Vessel fleet characteristics at 15 knot speed: This model would allow for use of 1 new 18 knot and 1 existing 15 knot vessel. A back-up existing vessel would be needed during summer and spring/winter seasons, and identified nearby during winter season . The faster 18 knot vessel would allow for shorter U-shaped and triangular routes. The schedule shown is similar to Schedule A in terms of trip departures by season, but allows more "slack" time between departure times because of faster route times. The assumption for Schedule B is that financing of a new vessel may require several years after implementation of a consolidated single operator service. As with Schedule A, the Schedule B objective is to provide similar numbers of trips as currently offered for each season, with crew demands similar to Schedule A, but with cleaner and more efficient fuel consumption, and reduced vessel running hours.

B1. Summer Peak (June (last week) to September (first week): Starting with one new 49 passenger (18 knot) and one used 49 passenger vessel (15 knot), as a backup vessel, and later adding a second new 49 (15 knot) passenger vessel. The schedule will require an average of 2 crews per day. Summer load/unload time would be 8 minutes at each stop but can be longer at peak periods if needed with the faster vessel, to allow for peak freight and passenger demand. The attached schedule represents a similar number of trips and seats as option A1. As in A1, to complete peak passenger demand, added runs can be provided by the back-up vessel. Similarly, if a supplementary hand freight service is needed, it could be provided by keeping the schedule, but eliminating passengers from one or more scheduled trips at off-peak demand periods, most likely during the weekday schedule. The on-call Sutton service on designated trips would also be offered in the summer season.

- 9 departure trips per weekday from NE (including commuter and mail trips); 5 departure trips per weekday from Manset; 13 hour operation:
- 6 departure trips Saturday and Sunday from NE (includes mail); 5 departure trips Saturday and Sunday from Manset; 12 hour operation
- 2 on- call stops at Sutton all days; one AM and one PM.

Schedule Option B1.1: Summer Weekday (2 vessels); One New Vessel (18 knot), 5 minute stop, 55 minute route cycle; One Back-up Used Vessel (15 knot)

(*) Doesn't run on Saturday or Sunday, (b) backup vessel, (S) Sutton, (L) layover

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00* AM					
					6:55*	7:30					8:25
8:35(S)					9:50(S)	10:00					10:55
						11:00b(S)*					11:50b(S)*
11:05					12:00noon	12:10					1:;05 PM
12:00b(S)					1:20b(S)*						
1;00&noon					1:55PM	2:10					3:05
						3:00b(S)*					4:15b(S)8
3:15					4:10	4:00					4:50
					5:30b(S)*						
5:00					5:55	6:10*					
					7:05*						

B2. Spring/Fall Shoulder Season ((Fall – (Sept. Labor Day Through October 31; Spring - May 1 through June last week) A similar schedule to option A2 includes one 18 knot 49 passenger primary and one 15 knot 49 passenger backup vessel with 2 crews. Includes two U –shaped routes; from NEH and from Manset.

- 6 U-route departures per day on weekdays from NE (includes commuter and mail); 4 departure trips per day from Manset; 12 hour operation
- 4 U-route departure trips per day from NEH and 3 departures per day from Manset on Saturday and Sunday; 10 hour operation

Schedule Option B2.2: Spring Fall Weekday (1 Vessel): New Vessel (18 knot), 5minute stop, 55 minute cycle; One Back-up Used Vessel (15 knot)

(*) Doesn't run on Saturday or Sunday

SWH	GCI		LCI		NE Harbor		GCI		LCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM					
					6:55*	7:30					8:25
9:00					9:55	10:30					11:25
						12:00b*					12:55b*
1:05b*					2:00b*						
11:35PM					12:30	2:30					3:25PM
3:35					4:30	4:40*					
					5:35*						

B3. Winter Season (Nov. 1 to April 30): One 49 passenger vessel with 2 crews and a backup 49 passenger vessel. Stops would be for 5 minutes. Weekday and weekend triangular service would be to and from NEH only.

- 4 trips per day from NEH on Monday through Friday; intermittent 12 hour operation
- 3 trips per day from NEH on Saturday; intermittent 9 hour operation
- 1trip per day from NEH on Sunday; 1 hour operation

Schedule Option B2.3: Winter (1 vessel) NEH Triangle only); New Vessel (15 knot), 5 minute stop, 50 minute route cycles; Back-up Existing Vessel (12 knot)

(*) Doesn't run on Saturday or Sunday, (**) Doesn't Run Sunday, (***) Runs Saturday and Sunday Only

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM		6:15*		6:25*	
					6:55	8:00**		8:40		8:25	
					8:55	11:00**		11:40		11:25	
						(3:30)***PM					
					(4:25)***						
					11:55	4:30* PM		5:15		5:05	_
					5:25*						

Schedule Option C. New Vessel Fleet with 18 knot speed: This model would require use of one new 49 passenger18 knot primary vessel (monohull or catamaran) with a used 49 passenger, 15 knot backup vessel. As the primary vessel would be able to complete the U-route in 50 minutes, one vessel and 2 crews would be needed during the peak summer season to serve current passenger and freight needs, with the backup vessel available for supplemental freight only and other passenger uses. With reduced vessel running time the faster primary vessel would save on crew and fuel consumption, during peak periods, but would be less fuel efficient particularly during off peak months. The used 15 knot vessel could be used as backup during the transition period to spread the capital costs over several years, with eventual construction of a new 15 knot replacement vessel. Although total scheduled trips are similar to current combined levels, higher speed and capacity vessels would allow for the shorter U-route service trip times during all seasons. Improved summer and shoulder efficiency is achieved with the 18 knot vessel able to complete a U-route cycle in 50 minutes. As with other options, the backup vessels could be used for peak period supplemental passenger and/or freight only trips as needed. Vessel capacities are assumed at 49 to meet current demand, but could be reconsidered based on actual demand at such time as a larger and more expensive 21 knot ferry was to be built. While an advantage of a single 21 knot ferry operation would be a slight reduction of engine running time and crew hours, the higher construction a fuel costs might be greater than the potential savings.

C1 Summer Peak: Requires one new 49 passenger, 18 knot vessel with 2 crews and one existing or/new 49 passenger 15 knot backup vessel available for supplemental freight and/or harbor cruise operation. The on-call Sutton service on designated trips would also be offered in the summer season.

- 9 departure trips per weekday from NE (including commuter and mail trips); 5 departure trips per weekday from Manset; 13 hour operation:
- 6 departure trips Saturday and Sunday from NE (includes mail); 5 departure trips Saturday and Sunday from Manset; 12 hour operation
- 2 on- call stops at Sutton all days; one AM and one PM.

Schedule Option C1.1: Summer Weekday (1 Vessel); One New Vessel, (18 knot), 5 minute stop, 45 minute c(*) Doesn't run on Saturday or Sunday, (b) backup vessel, (S) Sutton, (L) layover

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00* AM					
					6:50*	7:30					8:20
8:30(S)					9:50(S)	10:00					10:50
						11:00b(S)*					12:15(S)*
11:00					11:50 noon	12:00					12:50 PM
12:25b(S)					1:45b(S)*						
1;00 noon					1:50PM	2:00					2:50
						3:00b(S)*					4:15b(S)8
3:00					3:50	4:00					4:50
					5:30b(S)*						
5:00					5:50	6:00*					
					6:50*						

C2. Spring/Fall Shoulder Season ((Fall – (Sept. Labor Day Through October 31; Spring - May 1 through June last week) A similar schedule to option A2 and B2 but includes the 18 knot 49 Passenger primary and one 15 knot 49 passenger backup vessel with 2 crews. Also includes the U –shaped routes from NEH and from Manset.

- 6 U-route departures per day on weekdays from NE (includes commuter and mail); 4 departure trips per day from Manset; 12 hour operation
- 4 U-route departure trips per day from NEH and 3 departures per day from Manset on Saturday and Sunday; 10 hour operation

Schedule Option C1.2: Spring Fall Weekday (1 Vessel); One New Vessel, (18 knot), 5 minute stop, 45 minute cycle; Back-up Vessel (15 knot) (*) Doesn't run on Saturday or Sunday

SWH	GCI		LCI		NE Harbor		GCI		LCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM					
					6:50*	7:30 AM					8:20
9:00					9:50	11:00					11:50
						12:00b*					12:55b*
1:05b*					2:00b*						
12:00noon					12:50PM	2:30					3:20
3:30					4:20	4:30					
					5:10						

C3. Winter Season (Nov. 1 to April 30): With a schedule like A3 and B3, this option includes one 18 knot 49 passenger vessel with 2 crews and a backup 49 passenger vessel. Stops would be for 5 minutes. Weekday and weekend triangular service would be to and from NEH only.

- 4 trips per day from NEH on Monday through Friday; intermittent 12 hour operation
- 3 trips per day from NEH on Saturday; intermittent 9 hour operation
- 1trip per day from NEH on Sunday; 1 hour operation

Schedule Option C1.3: Winter (1 vessel) NEH Triangle only); New Vessels (18knot), 5 minute stop, 45 minute route cycles; Back-up Vessel (15 knot) (*) Doesn't run on Saturday or Sunday (**) Doesn't Run Sunday (***) Runs Saturday and Sunday

SWH	GCI		LCI		NE Harbor		LCI		GCI		SW
lv	ar	lv	ar	lv	ar	lv	ar	lv	ar	lv	ar
						6:00*AM		6:15*		6:25*	
					6:50*	8:00**		8:15**		8:25**	
					8:50	11:00**		11:15		11:25	
					11:50	(3:30)***PM		(3:50)***		(4:05)***	
					(4:25)***						
					11:50	4:30* PM		4:50		5:00	_
					5:25*						

2.5 Recommended Final Routes and Benefits

Routes recommended for the consolidated service would be the Option 3 U-shaped route from Northeast to Manset for summer and shoulder seasons and the Option 1 Northeast to Northeast triangle route for winter service.

Schedules for the Option A used ferries at15 knots and Option B new ferry at 18 knots were similar in terms of number of trips and departure times for all seasons, but the faster ferry would allow for more flexibility in maintaining schedules. Option C with the 21 knot ferry didn't have any advantages in schedule over Option B. Other options tested with either existing 10 knot ferries or used 12 knot ferries were substantially less efficient and required much more use of the two vessels to meet schedules during the summer and shoulder seasons.

The differences for the new ferry Options A and B were in the trip cycle times with the 15 knot ferry cycle times being a bit longer than the 18 knot ferries. The 15 knot ferry would be considerably better able to keep up with the summer season schedule for U-shaped routes than the 12 knot used vessels. The advantages of the 18 knot ferry would be even more flexibility for longer landing times for freight and mail if needed, and a greater ability to make up time with speed for unexpected delays. In some instances the faster ferry can also be better at sea-keeping in more extreme weather conditions encountered during the fall, winter and spring months. On the other hand, disadvantages of the 18 knot and 21 knot ferries are the incrementally higher performance engine cost, and more fuel burned at the higher speed. The higher fuel consumption can be often offset during periods of high fuel costs by simply opting to run the vessel at lower than full cruising speed.

While either the 15 or 18 knot new ferries and their schedules would be feasible, the flexibility and sea keeping advantages of the 18 knot ferry would favor the faster vessel and its schedules if the added capital cost is not too excessive.

3. VESSEL NEEDS AND SPECIFICATIONS

3.1 Overview: Survey Recommendations and Operating Conditions

3.11 Overview:

The Town ferry needs for passengers and freight have been provided for decades by a fleet of similar sized but otherwise varied vessels. The vessels vary in age from 10 to 50 years, and are generally able to cruise at 10 knots or less. Hand freight has long been integrated on all passenger vessel trips including mail, business and personal freight components. Larger freight and vehicular transport needs have been handled separately by barges and landing craft on an on–call basis by multiple operators. This chapter will focus on the passenger and hand freight vessel needs and general recommended specifications. The heavy freight barge and roll-on roll-off services are addressed more generally, as it is recommended that the multi-operator service will need to continue independently of the scheduled passenger operations.

3.12 Survey Comments and Recommendations:

Concerns were expressed in the 2014 survey about the suitability and condition of existing vessels. Primary concerns had to do with the safety and condition of the various vessels used by multiple operators during the summer season and by the primary operator during the winter and spring seasons.

- Vessel suitability for passenger uses, for hand freight uses and for the combined effects of handling both on all trips.
- Surprise that the current fleet of vessels could pass Coast Guard inspection and cited the lack of safety equipment combined with frequently inexperienced crew as concerns
- Safety concerns of getting on and off vessels in different seasonal weather conditions.
- Navigation of vessels to and from landings at extreme low tides.
- Significant increase in hand freight amounts and related delays in service, including more on-line orders and construction material transport.
- Some vessels are better suited to wind and storm conditions than others
- Maintenance and upkeep of older vessels was inconsistent and a cause for alarm.
- Combination of better vessels and improved docks needed.

3.13 Operating Conditions:

" If you don't like the weather, wait a minute…" The operating conditions change constantly in the straits and harbors connecting the Cranberry Isles, and pose complex challenges for selecting and designing the safest and most sea-worthy vessels. Summer conditions can vary considerably in terms of wind and wave exposure, storm events, and fog. Fall and winter conditions change with shifts in prevailing winds, increased wave states, shorter daylight hours and periodic icing. Winter months require additional heated interior seating. The Manset dock at Southwest becomes too exposed for reliable use in late fall through spring, requiring and alternative landing at the more protected upper Southwest or Northeast landings. In addition, although the current landing locations at the islands are situated as well possible, they pose other

limitations on vessel design in terms of berthing space and orientation, maneuvering room around moorings, and float freeboard height.

The original Beal and Bunker vessels were purposely designed to suit the specific navigation conditions at the Cranberries, and have served well for many decades. However, they were designed to very different USCG and safety standards and are close to the end of their useful life. While it is possible to design improved new vessels that are better suited to year round conditions, provide improved passenger and freight handling, and meet the more stringent regulatory standards, such vessels come at substantial price. The alternative of finding a newer (10 years or less) used vessel that comes closer to navigation, safety and functional requirements may be more cost effective, but relies on the right boat on the market at the right time at a reasonable purchase and refit cost.

3.2 Recommended Ferry Specifications

3.21 Matching New Vessels to Proposed Ferry Routes:

The report recommends consolidated passenger routes for more reliable and efficient services. New ferry vessels can be tailored to best serve the proposed "U-route that combines the two separate summer and fall triangle routes into a single connection from Northeast to the islands to Manset. The winter and spring services would remain a triangle from Northeast Harbor.

Vessel improvement objectives would include the following:

- Meet and exceed current USCG safety and inspection standards.
- Improve passenger boarding safety and convenience.
- Improve freight handling and stowage
- Provide primary and backup vessels with similar operating characteristics.
- Increase vessel speed and improve sea keeping (vessel handling) for all seasons.
- Passenger capacity to allow for summer peak demand.
- Provide enclosed heated seating for winter and bad weather.
- Comply with current and anticipated engine emissions standards.
- Vessel useful life of 30 years or more.

3.22 Recommended Vessel Specifications:

The proposed vessel specification guidelines are described to meet the objectives in general terms. Actual vessel specifications would need to be updated and more detailed, at such time as the Town issues an RFP for operators. The following guidelines are intended for either new construction or for newer used vessel acquisition

USCG Safety and Inspection Standards: Any new vessel will need to comply with prevailing USCG license standards by definition. Any used vessel should be surveyed to comply current USCG requirements, including recent modifications to stability and

passenger capacity. Requiring any used vessels to have been built in the past 10 years will assist in meeting current standards.

Passenger Boarding Access, Safety and Convenience: Boarding of passengers and freight should be improved I several ways on new or used vessels. While full compliance with ADA from dock to pier cannot be achieved with the tide range without overly complex and costly lift systems, the transition from float to vessel can be greatly improved for both accessibility and safety of all. Raising the passenger deck level relation to the dock freeboard height can make transition safer and easier for all, compared to the current step down vessels. Elimination of barriers, and improved communications can also enhance access and safety.

Freight Handling and Stowage: Hand freight systems need to be rethought and improved to meet the increasing demand, and to reduce the time required to load and off-load. Location and access to freight storage on the vessel can be improved, and shifted away from cabin top. While passenger hand freight may need to continue to be in the passenger area, "shipped" hand freight could be placed on palates or capsules and lifted on and off vessels with hoists. This also suggest that shipped freight may need to handled on specified off-peak schedule times to allow for the added loading and unloading time. During high peak periods, there would also be the option of running freight only trips for shipped freight.

Primary and Backup Vessels with Similar Operating Characteristics: A minimum of two vessels is needed year round to assure that if one is disabled, a backup can replace it. While back-up vessels are often used for non-competing services, particularly during summer months, they must be available for emergency and routine (maintenance) replacement of the primary vessel(s). In order to maintain schedules and meet demand, the back-up vessel needs to have similar speed and capacity to the primary. It is recommended that the primary vessel be of new construction, while the backup can be a refitted used vessel.

Vessel Speed and Sea Keeping: In comparable scheduled ferry operations in Maine and other locations, the safest and most efficient vessels are those that are design and built for a specific route, with consideration for such factors as travel distance, normal operating conditions, and extreme wind and weather states.

The recommended cruising speed for new or used vessels is based on the routes, with a minimum of 15 knots and a preferred 18 to 20 knots. Peak speed is generally 10 % higher than cruising speed. Since the approach or idling time and distance is substantial for each route, and the full cruising speed distance is limited, higher vessel speeds than 18 to 20 knots provide little advantage, as shown in the analysis in chapter 2.

Sea keeping is also an important design factor, since the wind and wave patterns change substantially from season to season. Even in the relatively protected operating areas, the northeast exposure requires a relatively high bow combined with a generally low profile for good handling, a characteristic developed for the traditional lobster fleet. The

combination of close maneuvering room and periodic high winds around docks suggests the need for a bow thruster. Safety and maneuverability also strongly favor a twin-engine design rather than a single screw. Relatively shoal draft is also needed because of low tide conditions at the island landings, although it is also possible to alter schedules at predictable extreme low tides.

Monohulls are generally recommended over multi-hull catamaran designs for several reasons. While twin-engine catamarans have distinct advantages in maneuverability, they also require longer hulls and broader beam than an equivalent capacity monohull. The current island landing locations and tight mooring fields, particularly at Islesford, would need to be reconfigured for catamaran use. Cost-benefit is the other factor as monohulls are generally considerably less expensive (75% to 150% less) than catamarans, whether new or used. Finally, the advantage of a faster catamaran of 25 knots or more does not substantially improve the trip times for the short runs required. The maximum practical vessel length for the existing island landings appears to be 50 feet.

Passenger Capacity to Meet Peak Demand: A minimum capacity of 49 passengers is recommended based on current summer peak demands. Even if peak demand increased, it would be more cost effective to operate extra scheduled service with the back-up vessel, than to have a larger, higher capacity vessel operating year round, with added fuel and upkeep costs. 49 passengers is a USCG threshold for various standards including vessel design, equipment and crew. However, depending on the freight capacity, some of those design requirements might change.
Route analysis indicates that one primary vessel and one backup should be more than adequate to meet current and anticipated passenger and freight demands. At least 25 heated interior seats with standing room should be provided for winter and bad weather

Additional Vessel Requirements: Both primary and secondary vessels, new or used, will need to meet several additional standards including:

- Compliance with current and anticipated engine emissions standards.
- Ease of maintenance, which generally precludes wooden hulls.
- Adaptability to any anticipated docking and freight handling modifications on the islands or mainland that may involve changes in float configuration or access.
- A minimum useful vessel life of 30 years for new or used vessels

New Versus Used Vessels: The choice of new or used vessels is a matter of costs and benefits. The capital costs of new vessels meeting the above standards can be as much as three to four times greater than for a roughly equivalent used vessel. The added costs of a new vessel need to be borne by the operator, which most likely would either be absorbed by higher fare costs for passengers and freight, or result in higher Town grants to offset those fare increases. The distinct disadvantages of used vessels are that they are not as likely to meet all desired safety and operating criteria, and that they will either need to be replaced or have major overhauls sooner than new vessels, most likely in the next 5 to 10 years depending on age and condition.

For comparison, consider the original purpose built Beal and Bunker vessels that have operated effectively for over 50 years, but are now near the end of useful service. The total investment and related costs of operations and fares for new vessels over a life of 30 to 40 years is likely to be much less than the needed replacement of used vessels every 5 to 10 years. Short term safety and performance advantages combined with long term capital investment efficiency of new vessels, needs to be weighed against the short term financial advantages of used vessels.

The long term sustainability benefits of new vessel construction should be supported by Town efforts to identify and secure added operation grant resources and capital construction support grants to allow for a new operator to include purpose-built vessels in a consolidated new ferry system. Further research is recommended on how this was initiated and results to date at Isle au Haut and Chebeague, without the two Towns financing or owning the vessels.

3.3 Recommended Vessels

Summary of Recommended Guideline Specifications: In order to best serve the new consolidated U- route and winter triangle route, the vessels recommended would need to meet the following minimum or preferred standards:

- Passenger capacity of 49 passengers, with interior seating for 25.
- Minimum vessel cruising speed of 15 knots; preferred speed of 18 to 20 knots.
- Minimum of 2 vessels, including primary and backup
- Purpose-built new or refitted monohulls of 50 feet or less
- Improved passenger access from float to vessel
- More efficient freight handling
- Designed to operate safely and efficiently in the variable year round conditions between TCI and the mainland.
- Meet all USCG safety and license requirements
- Compliance with current and anticipated engine emissions standards.
- A minimum useful vessel life of 30 years for new or used vessels

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4.0 Landings and Infrastructure Needs

4.1 Introduction and Background

Providing for improved ferry transportation needs to coincide with improved dock and harbor infrastructure. Safer and easier winter landings are a high priority as is easier access for emergency personnel response to medical incidents and other critical conditions.

The TCI docks and harbors have developed over time, although there has not been a comprehensive plan for improvements. Recent improvements include:

- New vehicle/boat ramps at GCI & LCI, 80' gangways at GCI and Manset for easier accessibility funded by a grant from Federal Transit Administration & ME-DOT
- GCI & LCI dock stabilization and other improvements funded by town funds
- LCI dock extension is in the design process with design fees funded in part by ME-DOT and anticipated construction to be 50% funded through ME-DOT Small Harbor Improvement Program (SHIP)

With the anticipation of newer, faster, and more accessible passenger ferries, TCI will need to upgrade docks, harbors, and other marine facilities for safer and more efficient passenger ferry operations. Our docks and harbors act as our highways to the mainland and are the most important infrastructure to our island transportation safety, accessibility, and sustainability

4.2 Proposed Improvements

There are improvements underway as the Islesford Pier Extension Project that is now in the design phase as well as others in concept that will need to advance into design that are itemized in this section. TCI dock improvements have been sporadic and often been reactive to pressing needs. An overall comprehensive plan of TCI dock and harbor improvements would help the town plan for ME-DOT funding to support the projects.

4.2.1. **TCI Master Plan for Docks and Harbor Improvements**

In order to develop a schedule and priority for dock and harbor improvements, a comprehensive master plan of improvements should be undertaken for GCI, LCI, Suttons, and Manset. This master plan will offer a phased improvement plan that can be tied into ME-DOT yearly funding rounds. The master plan would be developed by our current marine engineers FST/Stantec working directly with the TCI Harbor Committee. The scope of the master plan would be:

A. Prepare a comprehensive program list of improvements for each harbor
B. Develop conceptual plans for docks and harbor improvements for each location- GCI, LCI, Suttons, and Manset
C. Prepare a priioritization of these improvements over a five-year basis
D. Identify ME-DOT and U.S. Department of Transportation funding sources and their anticipated funding round schedules to support design, permitting, and construction

This master plan would be eligible for funding under a number of ME-DOT programs.

4.2.2. Great Cranberry Island

The GCI dock has the benefit of a partial full depth barrier protecting from the southwest. There have been a number of improvements discussed to increase the safety of winter landings and accommodate more summer activity at the docks and floats.

Long-Term Improvements envisioned may include:

1. An improved wave fence, based on the latest design standards, should be added to the west side of the dock. The wave fence has been unsatisfactory in the past and was reinforced and filled in along the top during the deck repairs of 2009.

2. Reconfiguration of the dock to provide additional protection for ferries when winds are E and NE. Possible configurations to consider:

    a. A new wave fence extending from the Northeast corner of the dock at the end, approximately 10 to 15 ft out may cut off sufficient wave action from the northeast to make boat landings easier at the existing stair. There is concern that the "throat" between the TCI pier and eastern pier may be tight for navigation.
    b. A dock extension directly north could make landings to the west and east possible depending on prevailing wave action.
    c. An additional western stair along the main dock section tighter to land may offer optional landings but would have to be studied for feasibility of depths and other factors. It was determined as part of the last project that this would require dredging to get sufficient depth
    d. A dock extension to the northwest with a wave fence on the northeast side, to provide an alternate landing location in the event of NE winds
    e. A dock extension in the shape of a T, from the existing north end, with a wave fence across the north side, which would provide a protected berth on both sides for ferry operations.
3. A breakwater could be built on a shoal approximately 750 ft. off the end of the existing dock that would break the northeasterly wave action and protect the dock. This would require significant permitting and time to accomplish, although be very beneficial in the long term.
4. Floating breakwater offshore of existing boat mooring field to protect all boats and the town pier.

4.2.3 Little Cranberry Island/Islesford

The Islesford Pier Extension Project is currently in the design and permitting phase. The Harbor Committee working with FST/Stantec marine engineers has developed this 40' extension. Funding for design has been procured and it is anticipated that Small Harbor Improvement Program (SHIP) funding will support approximately 50% of the construction cost.
Other Long-Term Improvements suggested include:

A. Other items of consideration in the Islesford Pier Extension Project may include:
    a. Reconfigure floats for better summer berth arrangement
    b. Refine mooring field for safer and easier passenger ferry operations and lobster boats utilizing their dock
    c. Dredge alongside the dock on both faces to provide 6-8 ft depth further toward shore, and make dock more usable.
    d. Provision for a winter-time float with fixed pilings maintains float location

B. Develop the sheltered area between the Islesford Dock Restaurant pier and the granite pilings as a possible option for wintertime float by improving the existing stone breakwater fragment north of the restaurant. This is a very long-term option and would require significant long term planning for the dock and land area.

4.2.3 Sutton Island

The Sutton town dock location has been the subject of concern for low-water docking availability for current passenger ferry vessels and will continue to be for new and improved passenger vessels. Of major concern is the accessibility for response to medical and other emergencies on the island.

There has been discussion amongst Sutton Island land summer residents and other townspeople about securing another dock location that will make an all-weather landing more feasible. As part of the

master plan as discussed in item 4.2.1 in this section, a site location study should be undertaken with islands residents, the Harbor Committee, and FST/Stantec to develop the optimum location considering land available. A new dock location project would be highly rated for MEDOT funding due to its safety/emergency accessibility needs for island resident.

4.2.4 Manset

The Manset dock and harbor are used on a seasonal basis from spring through fall. Seasonal ferry service currently runs approximately May 15 to October 15th. When the dock and site were purchased by the Town in 2001 (2002?), it was envisioned that the Town may in the future build a year round dock to serve the islands if the facilities of Northeast Harbor were not available to TCI.

Another less costly option may be available is to partner with the Town of Southwest Harbor (SWH) to extend the town's Manset Dock to accommodate more protected landing options for passenger ferry service. This could include a dock extension and other methods of protection.
The following points were made:

Some long-term improvements envision include:

A. Guide piles at each float would increase stability of floats if extended seasonal use were desired. This would require soil borings to determine if adequate soil depth was available.
B. The bathymetry is very shallow for a long way out, and the existing floats do not reach deep water for all tide boat access until the very last floats. When the floats are removed for the winter then the facility is not all-tide and thus unusable for scheduled ferry service. Several versions of a year round dock plan were developed by Kleinschmidt engineers in 2006 that located a new vehicular dock approx. 12-14 ft. wide west of the current dock in the direction of the SWH Coast Guard Station. The L-shaped dock is planned to reach deeper water and provide protection for landing to the inside the L on the westerly portion of the dock, with attenuating wave fences. In the summer, there would be floats and gangways similar to the existing situation.
C. Partner with SWH on the dock extension and improvements to make it a year-round passenger ferry dock. This option should be included in the master plan described in item 4.2.1 in this section. Funding for this extension would receive a high priority rating with MEDOT as joint town funding to make passenger ferry service feasible without the current restrictions to one operator in Northeast Harbor.

4.2.5. Other Items to Consider in Improvements:

Other recommendations for improvements that may be considered in the improvements include:

A. Wave Attenuation and Sheltering the Landing Sites: there was no firm agreement among the specialists about the best practical protection against heavy seas. One view is that wave fences are preferable to fixed structures because of their cost and obtaining permits. The other view is that fixed structures such as rubble breakwaters and fixed granite stonewalls filled with stone fill are superior and long lasting but expensive and hard to get permitted.
B. Permitting: it was noted that permitting for dredging and the building of breakwaters is the chief difficulty in dredging for harbor improvement, because of the cost and length of time required to comply with all regulations. The Maine DEP and the Army Corps of Engineers are the primary permitting agencies, for harbor work such as pier construction, dredging and construction of breakwaters. With dredging, the chief difficulty in obtaining permits is disposal of the dredged material. Dredging permits require bottom soil sampling and testing. Dredging permits require considerable time (years) and need to be initiated as soon as indications are valid for proceeding.

Impact on marine life can also be a consideration for any major harbor alteration, such as widening docks, dredging and breakwaters

C. Pier-Widening: widening existing piers needs to take into consideration the shadow effect, that is, the impact on shore and marine life of extending the area not in direct sunlight. Pile supported piers generally do not have a problem with permitting from this issue but it has been a problem in past.

D. Landing Stairs: these stairs are unusual and not seen in other similar facilities in the State (or elsewhere that any of us are aware of). The usual facility is a float and a gangway ramp. The stairways are not particularly safe since they must be open on the water side and require a certain dexterity to step off the stair into a boat or vice versa. There is limited assistance that can be provided by an attendant The Town should consider if the continued use of the landing stairs is in the long term plan. However they have a long history and may be perfectly satisfactory, if there is no record of problems.

E. Floats:

- Cranberry floats could be improved with better attachment between float units and providing transition plates
- Floats should be at a uniform freeboard or height
- Floats would be safer if brought together rather than moored separately with gangways between them. This is probably historically done to allow individual float units to move separately in wave action
- Float with guide pilings, parallel to the pier would work as a safer landing stage at both GCI & LCI harbors

F. Railings and Gates:

- There are no codes that we know that apply to this type of structure since it is not a building and the State of Maine does not have a specific code applying to marine structures. OSHA rules do apply to piers. They require fall protection along the sides of piers when not used for cargo and gear handling. Cranberry has long provided a handrail along one side and left the other side of the pier open for the fishermen and load and unload traps. The trap slides and ladders have chains but they are seldom in place or have been removed.
- Cranberry piers are somewhat different than other piers in that they are long and relatively narrow and shared by fishermen and ferry passengers.
- Safety of fall protection can be upgraded. Possible actions:
    - Install railings on all openings not regularly used and portions of the pier edge not needed by the fishermen
    - Install spring gates at the tops of ladders and across trap slides and other openings. There are steel industrial gates that spring closed but are easy to push open from the ladder side. Relatively inexpensive and used in most factories, but not much on marine facilities.
    - Install hinged wooden panels that drop onto the deck along the sides of the piers now open and unprotected. When the fishermen want to use the side of the pier for unloading or loading, they hinge and fold down the panel and pit their traps on top of the panel. As long as the traps are there they will provide the protection same as the railing. When the traps are removed the hinged panel is raised and again protects the edge.

4.3 Public Funding Options

There are a number of state and federal funding options the town may apply for in the design and construction of the improvements described in this section. These include:

4.3.1. MEDOT – "Small Harbor Improvement Program (SHIP) is to promote economic development, public access, improved commercial fishing opportunities and works to preserve, and create, infrastructure at facilities in tidewater and coastal municipalities. The SHIP program assists municipalities in improving or creating facilities, such as; public wharves, piers, land and boat ramps. There is a required 50% local share under this program." From the MaineDOT website. http://www.maine.gov/mdot/pga/ship/

TCI has made use of this program over time, but not recently in the development of the dock improvements. It may be an excellent resource for the Islesford Pier Extension Project. Some in-kind work of the town may count towards the 50% contribution.

4.3.2. MEDOT - Municipal Partnership Initiatives (MPI) this program is planned as a flexible funding program to "fund and build projects of municipal interest on the state infrastructure system with DOT as a partner. It is MaineDOT's intention that this program remain simple, flexible, and fast moving." The program is caped at $500,000 per project. See website for full understanding: http://www.maine.gov/mdot/planning/docs/MPIMunicipalGuide.pdf

4.3.3. Maine Department of Agriculture, Conservation, and Forestry – Grants for Municipal and Regional Projects in Maine's Coastal Zone This program's first objective is "Ensuring Sustainable, Vibrant Coastal Communities…" TCI received a $30,000 grant from this program for the design fees of the Islesford Pier Extension Project. See website for full understanding. http://www.maine.gov/dacf/mcp/index.htm

The Town of Cranberry Isles will rate highly in these programs as the facilities we are interested in improving increase accessibility and provide for safer transportation facilities.

These improvements will require state and federal support unless the town is willing to make major infrastructure investments through property or user taxes. The Harbor Committee and Municipal Advisory Commission with the assistance of the Town Facilities Supervisor should initiate a master plan for improvements with assistance of a consulting engineering firm like FST/Stantec with Maine DOT experience to create a master plan with priority elements in order to be proactive for Notification of Available Funding (NOFA) when ME DOT has such and other federal funds are available of could be procured.

The docks and harbors are the 'streets' of TCI that connect to other communities, and as such must be safe, up to date, and serve a dynamic year round population.

5. PASSENGER AND FREIGHT MARKET DEMAND

5.1 Services and Approach:

Calculating the demand for passenger tips and freight needs is necessary for preparing a financial model, as the primary revenue source for existing and new services. As the surveys and discussions indicated that the demand for passenger and freight services is relatively constant, with some variations depending on the amount of on-island construction occurring in a given year. The freight demand divides into hand freight that is normally carried by the passenger ferries as well as by other private vessels, and the heavier barge or roll-on roll-off freight that is handled by multiple freight operators. Hand freight includes paid freight deliveries but not personal passenger carry-ons. The focus of this section is to estimate the demand for paid passenger and hand freight to determine the potential revenue. While barge freight is discussed below, the service has not been included in the analysis, as it is likely to be independent of the consolidated passenger service, even though the future operator may offer such services separately with different vessels.

5.2 Passenger Ridership Demand Estimates:

Approach:

TCI ridership demand appears to be relatively stable based on surveys and data collected from operators. There appears to be no significant shift in year round and seasonal island populations. While there seems to be a gradual increase in summer season day trip visitors, there is no data that supports significant changes in these numbers either. The recommended vessel passenger capacity (49 passengers) described in Chapter 3, is expected to accommodate the relatively constant demand for the peak summer season, and seems more than adequate for off-peak seasons. Therefore, the approach used to determine ridership demand was to gather as much information as possible about passengers carried on the current multiple operator services. As the data available still remains somewhat fragmented, some extrapolation was necessary to account for all riders. It is recommended that a uniform system of daily ridership accounting be implemented with the current operators as soon as possible to provide more accurate annual ridership numbers as swell as seasonal totals.

Based on available information at the time of the study, the total ridership by operator is estimated to be as follows:

Current Ridership Demand by Operator:

TCI Ferry Operator	Summer Season (Jul, Aug)	Fall and Spring Seasons (Sept, Oct, April, May, June)	Winter Season (Nov, Dec, Jan, Feb, Mar)	Sub Total
1. B&B	19,300	9,950	3,400	32,650
2.Cranberry Cove		12,300 (June-Oct)		12,300
3. Sail Acadia- (commuter)		330 (May-Oct)		330
4. Downeast Windjammer- (commuter)			660 Oct-Apr)	660
TOTALS				45,940

5.3 Hand Freight Demand:

Approach: Little information was available regarding volumes or rates of freight orders based on contacts with current operators. It is assumed that levels of service similar to current practice will continue to be needed. Numbers of freight units are estimated as averages for different seasons and assigned estimated average freight costs. There are periods of high passenger demand during peak summer periods when islanders find a conflict between full freight demand and full passenger use, sometimes leading to overcrowding and longer layover periods for freight off-loading. Designating peak period trips as personal carry-on only can minimize such conflicts, and adding freight-only trips at midday if demand is high for what might be described as commercial freight. The recommended single operator service, to be awarded by the Town, allows for negotiated freight rates and adjusted schedules when and if needed, as well guidelines for timed dock layover, particularly during peak use periods.

Estimated Hand Freight Demand by Operator:

Operator	Season	Trips	Avg. Units x No. Trips	Avg.Bicycles x No. Trips
B&B Hand Freight	Summer	756	x 2 = 1512	x 0.5 = 378
	Fall/Spring	596	x 1 = 596	x0.2 = 120
	Winter	1128	x0.5 = 564	x 0.1 =112
Cranberry Cove	Summer	378	x 1 = 378	x 0.5 = 189
	Fall	294	x 0.5 = 147	x 0.2 = 59
TOTAL			3,200 units freight	860 bicycles

5.4 Barge Freight Demand

Approach:

The barge freight services handles larger freight orders, too large in size and/or bulk to be handled on the small passenger vessels and includes such articles as construction materials, residential or business equipment, fuel, and commercial or private vehicles of all sorts. Roll-on/roll-off (Ro-Ro) landing craft use the island ramps and carry private and commercial vehicles, and large construction equipment and materials. Barges or smaller freight vessels are used for other bulk freight. Barge and ro-ro links may be considered lifeline ferry services for the islands As fuel trucks, utility maintenance vehicles, and emergency equipment are carried by the landing craft, and, as such, may be eligible for State DOT funding grants.

Several specialized carriers, who serve numerous other islands in addition to TCI, currently handle barge freight. While B&B has handled some of the barge freight, it was carried on vessels other than the passenger ferries. There is currently no information available on volume, freight fares, operating cost or revenues for the multiple large freight carriers. It seems useful to keep the demand analysis and financial modeling for large freight separate from the scheduled passenger service, as the service may of necessity

continue to be run by different multiple entities, or possibly as a single consolidated service but by a different operating company. The Town may still want to consider having a contract for basic emergency services and/or a guarantee of a certain number of predictable scheduled trips per year, particularly during the winter months for fuel delivery.

5.5 Summary of Projected Market Demands and Potential Revenue

Assumptions:

Passenger Demand and Fare Revenue: While the passenger data was fairly complete for the 4 operators, the years for passenger counts varied, so the totals shown are a combination of different counts. However the data indicated that there were fairly constant volumes of riders for different years, as long as the number of trips offered remained similar. Fare rate averages vary by season as the number of full fare tourism visitors is highest during the summer, and decreases considerably during fall/spring and winter schedules.

It appears that the most likely area of future growth of ridership during the next 10 years would be summer season visitors depending on each islands interest in encouraging tourism. Tourism visitation could be encouraged by offering lower visitor fares, along with marketing island attractions and assuring that adequate visitor services are available. Islesford also has an Acadia National Park presence that could potentially be further developed with the NPS. Seasonal visitor ridership may be the most likely source of added passenger revenues should TCI decide to attract more day-trippers. Conversely, tourism visitation can be reduced by keeping fares high, which currently seems to be the case with relatively expensive day trip costs, particularly for families.

The revenue model assumes maintaining similar levels of resident and visitor demand to current ridership.

Hand Freight Demand and Revenue: Hand freight rate averages vary somewhat by season as it is assumed that there will be fewer but larger orders during the spring and fall construction seasons, as compared to the summer and winter seasons. Bicycles are included in the calculations at $5 per trip as they occupy space and handling time. The mail services are included as hand freight but not included in the commercial freight calculations as they are covered by the mailboat contract with the USPS.

Barge Freight Demand and Costs: As noted, the large freight service is not included as part of the model for the Town designated single operator for scheduled passenger service. A separate large freight/barge operations and management approach will need to be developed to complement the final passenger operation plan and may be better known closer to the time of passenger plan implementation.

Ridership Revenues:

Current Ridership Revenue by Operator:

TCI Ferry Operator	Subtotal of total one-way passenger trips:	Fare Average per one-way trip	Estimated Fare Revenue	Sub Total
1. B&B:				
Summer	19,300	$11	212,300	
Fall/Spring	9,950	10	99,500	
Winter	3,400	8	27,200	$339,000
2.Cranberry Cove: Summer/Fall	12,300	12	147,600	147,600
3. Sail Acadia- (commuter)	330	8	2,640	2,640
4. Downeast Windjammer- (commuter)	660	8	5,200	5,200
TOTALS	45,940			**$494,400**

Hand Freight Revenues:

Estimated Hand Freight Revenue by Operator:

Operator	Trips/total units	Avg. Units x No. Trips	Avg.Bicycles x No. Trips	Unit Rate	Sub-total
B&B Hand Freight					
Summer	756	x 2 = 1512		$12	$18,140
			x 0.5 = 378	5	1,890
Fall/Spring	596	x 1 = 596		20	12,520
			x 0.2 = 120	5	600
Winter	1128	x 0.5 = 564		10	5,640
			-0-	-	-
Cranberry Cove					
Summer	378	x 1 = 378		12	4,540
			x 0.5 = 190	5	950
Fall	294	x 0.5 = 147		12	1,760
			x 0.2 = 60	5	300
TOTAL		3,200 units freight	860 bicycles		**$41,600**

Combined Passenger and Freight Revenues **$536,000.00**

Barge Freight Revenues: Not applicable at this time.

Chapter 6 Financial Plan: Estimated Costs and Revenues

6.1 Financial Model Approach and Assumptions

The financial model is intended to provide an approximation of total operating costs for a proposed consolidated year round passenger and freight ferry service. Three sequential operating phased scenarios are considered:

1) single operator service using two used vessels,
2) single operator service using one new and one used vessel,
3) single operator service using two new vessels.

These scenarios are based on the proposed routes described in Chapter 2.

6.1.1 Ferry Operation Franchise Agreement: The financial model assumes a single provider service franchised or awarded through RFP by the Town of TCI, with the following conditions:

- Exclusive Island docking rights and priority for all year round scheduled passenger/freight operations.
- Franchise for operations for a 10-year period.
- All operating costs would be the responsibility the operator, with all operating revenues to cover those costs and profit.
- TCI would support those operations with capital and administration costs for dock and landside infrastructure
- TCI would also support operations with provision of limited operating subsidies and grants to the operator for commuter services, school travel and possibly the mailboat contract.

The TCI infrastructure and dock support costs are estimated separately in Chapter 4.

6.1.2 Ferry Operator Cost Assumptions: Ferry service costs to the operator would include:

- Operating costs including fuel, crew, administrative, maintenance and insurance
- Capital costs for vessels and equipment (used, or new).
- Operating costs are estimated for the different seasons by route and vessel scenario.
- Capital costs are estimated for each of three proposed vessel-phasing scenarios.
- All costs are based on current dollars for 2016 and are not inflated for future operating years.

6.1.3 Operating Revenue Assumptions: Two primary sources of revenue would be used to offset operating and capital costs including revenues collected by the operator and TCI grants to supplement direct revenues.

- Direct Operator Revenues would include passenger fare revenues and freight fee revenues, which could vary over time as operating costs increase. The volume of passenger ridership and freight demand is assumed to be relatively constant with only minor peak season growth projected
- Supplementary TCI grants would include subsidies such as commuter contracts (by TCI from MDOT and FTA), school contracts (from TCI), and the Mailboat contract (from USPS). .

6.1.4 Data Base Assumptions: Testing the financial viability of the scenarios is challenging since there are major cost variables and minimal current operating data available.

- Current operation subsidies can be calculated, including mail, school and commuter service contracts as a matter of public record.
- Operator capital and operating costs required informed estimates including. Variables such as vessels and equipment, and vessel operating costs are based on comparative industry standards,
- Base passenger and freight revenues are more difficult to estimate because of the multiple operators. Seasonal ridership data is fragmented, and freight volumes and revenues are not available.

It is not unusual for such cost and revenue information to be proprietary from competing private operators. With the four separate business operations, ridership, operations costs, and revenues are fragmentary and full accounting is a challenge. As such, information gathered provides only a partial financial base for model for future services. Despite the TTF efforts there does not appear to be a complete database to reliably estimate current annual and seasonal ridership levels, freight levels and rates, or operations costs. The costs and revenues are therefore best estimates based on multiple sources:

- Existing fragmentary revenue and ridership data.
- Observation of current operations and schedules.
- Comparative data from other services in the MDI region such as the Isle au Haut ferry
- Industry standards of ferry services in the northeast.
- Information and review provided by island residents, watermen, and boat builders

6.1.5 Annual TCI Ferry Operations Scenarios and Associated Cost Variables: The recommended single operator service scenarios include a three phased approach starting with existing vessels and adding two new vessels over a multi-year period, as described in Chapter 2. Cost variables include the following:

<u>Capital Cost Variables:</u>

- Vessels size and speed for used and new vessels,
- Financing and amortization rates for used and new vessels, depending on the timing of fleet replacement. It is assumed that the operator will be responsible for purchase of used vessels and construction of new vessels.
- Town purchase and ownership of vessels has been discussed and remains an option. Annualized costs would be similar to the scenarios shown, and would represent a substantial budget cost for at least 10 years.

<u>Operating Cost Variables:</u>

- Fuel costs for existing or new vessels. Fuel rates vary depending on the market price as well as fuel consumption rates for different vessel cruising speeds.
- Crew costs vary by season depending on the number of vessel trips per week and daily hours of operation.
- Landing fees at SWH and NWH

Revenue Variables:

- Fare box revenue for passengers
- Hand freight service fees
- TCI subsidies and for school and commuter services. It is likely that additional commuter contributions may need to be sought from MDOT to assist with the commuter and lifeline components of year round services.
- Mailboat contract with USPS. It is important that the mailboat operation be incorporated, if possible, in the single operator service for both efficiency and as a revenue base. While it has been recommended that TCI compete for the mailboat/USPS contract, it may remain need to be the responsibility of the operator, if such a municipal bid is not possible. It is also possible that a separate operator could operate the mailboat service independently, but the Town would then need to be clear that no passengers or freight could be included, as it would hurt the consolidated operator franchise.

6.2 Annualized Operator Costs of Ferry Services

6.2.1 Operating Scenarios: The recommended single operator service scenarios include a phased approach starting with two used vessels and adding one or two new vessels over a multi-year period, as described in the Chapter 2 recommendations for final routes. The recommended three phases include:

- Model I Start-up: Operator provides two used vessels with 15 knot cruising speed and 49 passenger vessel with hand freight capacity. Includes purchase of two used vessels and securing renewable mainland landing rights agreements.
- Model II Transition to One New Vessel: Operator constructs new 18 knot, 49-passenger vessel with hand freight capacity, with continued use of one used15- knot 49 passenger vessel.
- Model III Two New Vessels: Operator constructs a new 21-knot, 49 passenger capacity vessel and adds a second new15 knot vessel.

6.2.2 Operating Cost Basis: Many operators estimate operating costs in terms of an average of so-called "all-in costs" per vessel operating hour. All-in vessel hourly operating base costs typically include crew, fuel, routine maintenance, and administration. The hourly costs exclude such other annualized cost variable including vessel capital costs (construction or acquisition), capital amortization, and passenger landing or docking fees.

The vessel hourly all-in cost method is used in the following analysis with the amount based on comparable systems such as Isle au Haut and other northeast operations. In addition the fragmentary information from TCI operators (described in 6.1.4, Data Base Assumptions) is also incorporated in the scenario estimates where appropriate. While recent downward fluctuations in fuel costs have accounted for lower operations costs, the model costs used assume a higher average over several years, as fuel cost fluctuations are likely to continue.

The 2016 average "all-in" hourly cost basis is assumed to be $200/per hour of vessel running time for a used 15-knot vessel. The hourly rate is increased to $220/hour for the 18-knot vessel

that will have a more fuel-efficient engine, but will still burn more fuel at the 50% higher operating speed. A faster 21-knot vessel was also tested for schedule and cost comparisons at $240/hr.

The hourly cost is multiplied by the number of scheduled running hours per day and by season as shown in the tables for each phase. For days such as the winter or spring and fall weekends, when only limited service is operated, there is an incentive to group runs together as much as possible to reduce the total operation day for captain and crew, While the objective is to come as close as possible to schedules that support full time jobs for captains and crew members, the winter and summer season schedules may continue to necessitate some part time positions for the reduced trip schedules. The main challenge for consolidating crew schedules for year round weekday operations is the need to include AM and PM commuter schedule needs.

Once the base hourly operation costs are calculated, additional projected annual operator costs are added for each phase including estimated used and new vessel amortization costs, and annual NE and SW landing (or head) fees currently required as part of the agreements with the towns. Landing fees are for departing passengers only, or 50% of the total ridership estimates at each landing.

While based on recent discussions with existing and prospective operators, there may also be additional capital fees for a new operator to purchase an existing operation, or to establish a layover and service location. As many of the details and amounts are difficult to estimate, for purposes of this model, the business purchase or other start-up variables have been simplified and accounted for more simply and include as part of the cost of used or existing vessel purchases for phase I.

6.2.3 Operating Costs by Phase: The annualized operations costs will vary for: 1) different proposed models for different vessel combinations, 2) seasonal service schedule variations, and 3) variable hourly operating rates for different vessel speeds. Operating hours are based on the proposed service schedule options described in Chapter 2. Operating cost variations for each model reflect changes in operating hours as faster vessels are added to each phase.

<u>Model I Start-up (Two Used Vessels)</u>: Operator provides two used vessels with 15 knot cruising speed and 49 passenger vessel capacity with hand freight characteristics.

Model I Annual Operating Cost Estimate:

Hours and Cost of Operations by Phase and Season: Phase I (Two Existing 12 Knot Vessels)

Season	Weekday/ Weekend	Daily	Weekly	Season	Subtotal Hrs	Operating Cost @ $200/hr
Summer Peak 9 weeks	Weekday	15t x60m/60m = 15 hrs	15hr x 5d = 75 hrs	9w x 75hr = 675 hr	873 hr	
	Weekend: Sat/Sun	22t x60m/60m = 22 hr (Sat)	22hr /wked	9w x 22 hr = 198 hr		
Spring Fall Off-peak: 15 weeks	Weekday	11t x 60m/60m = 11 hr	11hr x 5d = 55 hr	15w x 55 hr = 825 hr	1005hr	
	Weekend Sat/Sun	9t x 60m/60m = 9 hr	9hr x 2d = 12 hr	15w x 12 hr = 180 hr		
Winter Off-Peak: 28 weeks	Weekday	4t x 60m/60m = 3.7 hr	4 x5d = 20 hr	28w x 20.5hr = 560 hr	672	
	Weekend Sat/Sun	4t x60m/60m = 4 hr	4 hr	28w x 3.7 hr = 112 hr		
TOTAL					**2550 hr @ $200/hr**	**<u>$510,000/yr</u>**

Model II Transition (One New Vessel, One Used Vessel): Operator constructs one new 18-knot 49-passenger vessel with hand freight capacity, with one used 15- knot 49 passenger vessel. The Model II operating hours is less than Phase I because of the higher vessel operating speed and shorter trip cycle time.

Model II Annual Operating Cost Estimate:

Hours of Operation by Phase and Season: Phase II (One New 18 knot Vessel, One Existing 15 knot Vessel)

Season	Weekday/ Weekend	Daily	Weekly	Season	Subtotal Hrs	Operating Cost @ $200/hr
Summer Peak 9 weeks	Weekday	15t x55m/60m = 13.8 hrs	13.8hr x 5d = 69 hrs	9w x 69hr = 621 hr	810 hr	
	Weekend: Sat/Sun	22t x55m/60m = 21 hr (Sat)	21hr /wkd	9w x 21 hr = 189 hr		
Spring Fall Off-peak: 15 weeks	Weekday	11t x 55m/60m = 10 hr	10hr x 5d = 50 hr	15w x 50 hr = 750 hr	999hr	
	Weekend Sat/Sun	9t x 55m/60m = 8.3 hr	8.3hr x 2d = 16.6hr	15 w x16.6hr = 249hr		
Winter Off-Peak: 28 weeks	Weekday	4t x 55m/60m = 3.7 hr	3.7x5d = 18.5 hr	28w x 20.5hr = 560hr	664	
	Weekend Sat/Sun	4t x55m/60m = 3.7 hr	3.7 hr	28w x 3.7 hr = 104hr		
TOTAL					**2473hr @ $220/hr**	**$544,100/yr**

Model III Final (One New Vessel): Operator constructs a new 21- knot 49-passenger capacity vessel to add to the initial used 15-knot vessel.

Model III Annual Operating Cost Total:

Hours of Operation by Phase and Season: Model III A (One New Vessel; 18 knots)

Season	Weekday/ Weekend	Daily	Weekly	Season	Subtotal Hrs	Operating Cost @ $200/hr
Summer Peak 9 weeks	Weekday	15t x52m/60m = 12.6 hrs	12.6hr x 5d = 63hrs	9w x 63hr = 567hr	724 hr	
	Weekend: Sat/Sun	22t x50m/60m = 18.5 hr (Sat)	18.5hr /wkd	9w x 18.5 hr = 167 hr		
Spring Fall Off-peak: 15 weeks	Weekday	11t x 50m/60m = 9.3 hr	9.3hr x 5d = 46,5hr	15w x 46.5 hr = 698 hr	926hr	
	Weekend Sat/Sun	9t x 50m/60m = 7.6 hr	7.6hr x 2d = 15.2hr	15w x 15.2 hr = 228hr		
Winter Off-Peak: 28 weeks	Weekday	4t x 50m/60m = 3.4 hr	3.4 x5d = 17 hr	28w x 17hr = 476hr	571	
	Weekend Sat/Sun	4t x50m/60m = 3.4 hr	3.4 hr	28w x 3.4 hr = 95hr		
TOTAL					**2221hr @ $240/hr**	**$533,040/yr**

Annual operating costs for the three phases are similar for several reasons. Even though the hourly operating costs increase with vessel speed, the hours of operation are reduced because of the shorter trip cycle time, as reflected by the total hours of operation for each. While all cost variables can increase over time, the most unpredictable has always been the cost of fuel, which can fluctuate annually by as much as 50 to 75% as evidenced by recent experience.

6.3 Annualized Operator Capital and Maintenance Costs of Vessels

Capital costs are estimated for the proposed vessel phasing scenarios. The capital cost components include:

- Acquiring and refitting the two used vessels for the model I scenario.
- New construction of one new vessel for model II scenario.
- New construction of two new vessels for model III scenario.

In addition to the capacity and speed of vessels, other variables include the financing options, the amortization period for vessels, and the phasing rate at which the existing fleet is replaced. While there has been some discussion of the possibility of the Town purchasing existing vessels and contracting for an operator, for purposes of this financial model, it is assumed that the operator will be responsible for purchase of existing vessels and construction of new vessels. Capital maintenance costs are often calculated as a percentage of the initial capital costs. The longer

term major service and refit costs for new vessels are usually in the 15 to 25 year time frame, and beyond the time line for this financial model.

6.3.1 Used Vessel Acquisition and Maintenance Costs: The market for suitable existing or used vessels varies widely depending on industry fluctuations. For this model it is assumed that two used 49 passenger, /15-knot vessels could be acquired in the 2016 market for $ 400,000 to $500,000. This may also include miscellaneous costs associated with the transition from the existing service. Maintenance costs are generally a higher percentage for older vessels.

- Model I Existing Vessel Purchase (2 vessels): $450,000.
- Model I Maintenance Allocation (@ 4% of Capital Cost: $18,000/yr

6.3.2 New Vessel Construction and Maintenance Costs: Costs of design and new construction of a 49-passenger/ vessel can also vary depending on specifications and building location. Assuming Phase II and III construction of a purpose built sea worthy ferry for year round Cranberry Isles conditions, it is estimated that one new 49 passenger/ 15 knot vessel would cost between $700,000 and $900,000. A new 18-knot vessel could be constructed in a Maine shipyard for $800,000 to $1,000,000. A new 21-knot vessel would cost between $1,100,000 and $1,200,000. Maintenance costs are generally a lower percentage for new vessels.

- Model II
  - New Vessel Construction Cost (18 knot vessel): $900,000.
  - Maintenance Allocation (@ 2.5% of Capital Cost: $22,500/yr

- Model III
  - New Vessel Construction Cost (21 knot vessel) $1,100,000.
  - New Vessel Construction Cost (15 knot vessel) $800,000
  - Maintenance Allocation (@ 2.5% of Capital Costs: $20,000/yr
    $27,500/yr

6.3.3 Financing Options and Amortization Periods: Purchase of a new or used vessel assumed to be based on conventional U.S. maritime financing practices, with vessel financing based on a 10 year amortization period. Vessel useful life is often in the 25 to 35 year range, and once a vessel is fully depreciated in 10 years, it can be refinanced.

6.4 Annual Revenues from Operations, Subsidies and Contributions

Revenue components for a single consolidated ferry operation include fares for passenger and fees for hand-freight services. In addition to earned revenues from operations there are existing revenue subsidies or contracts to be awarded to the single new operator, some of which might be potentially expanded.

6.4.1 Estimated Annual Revenue from Vessel Operations: There are several categories of annualized vessel income; passenger farebox receipts, hand fright on passenger scheduled vessels, and heavier freight on specialized non-passenger vessels.

Passenger Farebox Revenue: includes two components; 1) primary ticket sales for scheduled year round passenger operations, and 2) seasonal non-scheduled excursion operations. For purposes of this financial model, only costs and revenues from scheduled passenger services are included, as those would be covered by any operator agreements with the Town. It should be noted, however, that the opportunities for supplemental excursion or charter services would be a great benefit to the designated operator, and a profitable way to deploy the required backup vessel. The designated operator would have the exclusive Town franchise and landing rights for all commuter and regular passenger services, and would therefore collect all scheduled passenger fees. One condition of the franchise agreement would be to maintain affordable ticket levels at rates for year round and seasonal property residents, but allow for higher visitor fares.

Hand Freight Revenues: would include individual hand freight orders and contracted freight services carried on the passenger vessels. The town franchise and landing rights for the single operator would also include all hand freight services. The Town would also monitor and guide freight rates for island residents.

Heavy or Barge Freight: would be handled by specialized non-passenger vessels such as barge or roll-on/roll-off landing craft. Such heavy freight might be operated directly by the passenger operator or by independent operators. While there may be advantages for having heavy freight service provided by the designated passenger operator, it is more likely that the heavy freight operator would be a separate business because the heavy freight serves many islands and mainland locations other than just the Cranberry Isles. The passenger operator could be responsible for providing heavy freight services if consistent with broader vessel operation interests, but should provide such services outside the passenger franchise agreement. An independent operator could be under contract to the designated passenger operator, or have a direct contract with TCI for critical life safety needs such as fuel delivery, emergency construction needs, or other essential public services. Because of the complexity of the heavy freight service and the lack of any data on the on-call type service, heavy freight has not been included in the financial model.

Estimates of Annualized Passenger and Freight Revenues: revenue estimates and freight receipts are based on ridership and freight demand projections described in Chapter 5, combined with fare and freight rate cost assumptions. Average passenger fare rates are extrapolated from information provided by operators, and include variable average fares based on seasonal ticket demand differences. The table includes ridership and revenue information for the current four operators to establish an estimate of market demand and revenue by season.

Current Ridership Revenue by Operator

TCI Ferry Operator	Subtotal of total one-way passenger trips:	Fare Average per one-way trip	Estimated Fare Revenue	Sub Total
1. B&B:				
Summer	19,300	$11	212,300	
Fall/Spring	9,950	10	99,500	
Winter	3,400	8	27,200	$339,000
2.Cranberry Cove: Summer/Fall	12,300	12	147,600	147,600
3. Sail Acadia- (commuter)	330	8	2,640	2,640
4. Downeast Windjammer- (commuter)	660	8	5,200	5,200
TOTALS	45,940			**$494,400**

Estimated Hand Freight Revenue by Operator:

Operator	Trips/total units	Avg. Units x No. Trips	Avg.Bicycles x No. Trips	Unit Rate	Sub-total
B&B Hand Freight					
Summer	756	x 2 = 1512		$12	$18,140
			x 0.5 = 378	5	1,890
Fall/Spring	596	x 1 = 596		20	12,520
			x 0.2 = 120	5	600
Winter	1128	x 0.5 = 564		10	5,640
			-0-	-	-
Cranberry Cove					
Summer	378	x 1 = 378		12	4,540
			x 0.5 = 190	5	950
Fall	294	x 0.5 = 147		12	1,760
			x 0.2 = 60	5	300
TOTAL		3,200 units freight	860 bicycles		**$41,600**

Combined Passenger and Freight Revenues **$536,000.00**

6.4.2 Annual Financial Subsidy: While the existing TCI contracts for school and commuter services are available, it is likely that additional commuter contributions need to be secured through grants by MDOT to assist with year round weekday services. While it has been recommended that TCI compete for the mailboat/USPS contract, it may remain the responsibility

of the operator, if such a municipal bid for the contract is not possible. It is nonetheless important that the mailboat operation be incorporated in the single operator service for both efficiency and as a revenue base. .

The Town currently provides financial subsidy to the current operators.

1. Commuter Subsidy (ME-DOT subsidy)- this is a Federal Transit Administration (FTA) grant administered by ME-DOT that is apportioned to year-round island communities in Maine without Maine State Ferry subsidy. Our current contract provides $22,000/yr. There may be an opportunity to increase this subsidy.
2. TCI subsidy as part of the Commuter Service agreement – the Town matches the FTA subsidy and adds to this an amount determined by the yearly cost of the operation. In 2015 the Town's portion of the subsidy was approximately $42,000.
3. TCI School Transportation Budget - the School Department's 2015 Budget included approximately $22,000 for "Student Transportation Purchase – Elem. ($18,000) & Sec. ($4,000)" This part of the overall school Transportation Budget is for elementary school transport, secondary school transport, and off island trips for students. It does not include "Room & Board – Secondary".
4. USPS Mail Contract – the existing contract is approximately $40,000, and would partially subsidize the ferry service.
5. Other subsidies from public and private entities may be available.

Current (2015) and Projected Annual Grants and Subsidies:

Grant	Source	Current Annual Amount	Potential Increased Amount
Commuter Ferry Subsidy	M-DOT and FTA	$22,000.	$42,000
Town Commuter Match	TCI	$42,000.	$42,000
Town School Transportation	TCI	$22,000.	$22,000
USPS Mailboat Contract	USPS	$40,000.	$50,000
TOTALS		**$126,000**	**$156,000.**

Currently this total subsidy adds up to approximately $126,000. The subsidy would be awarded to the operator in order to subsidize fares, and scheduled commuter service. A goal for the Town would be to seek additional operating grant funds for the year round base service including weekday commuter and a portion of the off-peak scheduled runs to guarantee the Town a scheduled lifeline ferry operation, consistent with MDOT support of other year round island public transportation links.

The Table above includes a modest increase in subsidies (Potential Increased Amount) for two grants. MDOT would be asked to match the actual costs incurred by the Town in 2015, by increasing the grant to $42,000. This would keep the Town share at its current rate assuming a continued 1 to 1 match requirement. The mail contract would be increased to $50,000 based on new negotiations on the basis that the contract has remained constant over several renewal cycles.

6.5 Summary of Annualized Operator Costs and Revenues

Capital and Operating Costs and Revenues by Model:

The annualized operator cost and revenue models are described for each model, with variations of existing and new vessels.

6.5.1 Model I Costs and Revenues: Two used 49 passenger 15-knot vessels

IA. Initial Capital Costs:

1. Existing/Used Passenger Vessels: 2 @ $225,000 =	$450,000.00
Total Initial Capital Costs:	$450,000.00

IB Annualized Operating Costs:

1. Vessel Operations:	
- Per hour per vessel: @ $200/hr	
- Per year: 2550hr/yr:	$510,000.00
2. Vessel Maintenance: @ 4% x $450,000 (cap. cost) =	$18,000.00
3. Amortization: - Vessels (10 years)	$45,000.00
4. Dock landing fees:	
- NEH 21,400 Passengers @ $ .50 /boarding	$10,700.00
- SWH 12,300 Passengers @ $.50 /boarding	$6,200.00
Total Annual Operating Costs:	**$589,900.00**

IC. Estimated Revenues:

1. Passenger Fare Income	
- One-way Fare: (varies)	
- Projected Annual one way trips = 33,540	
- Annual Passenger Revenue:	$494,500.00
2. Hand Freight Income	
- Freight Rate: (varies)	
- Freight Units/yr:	
-Annual Hand Freight Revenue	$41,600.00
Total Scheduled Ferry Direct Revenues/year:	**$536,100.00**

ID. Operating Profit or Loss from Scheduled Ferries without Town Grants

1. Annual Operating costs	$589,900.00
2. Fare and Freight Revenue:	$536,100.00
Profit or (Loss) without Town Grants:	**$(53,800.00)**

IE. Town of TCI and Other Current Grants/Subsidies to Ferry Operator

1. MDOT:	
2. TCI	
3. USPS Mailboat	
Total Town Grants and Subsidies	**$126,000.00**

IF. Operating Profit or Loss from Scheduled Ferries with Town Grants

1. Annual Operating costs	($589,900.00)
2. Fare and Freight Revenue:	$536,100.00
3. TCI and Other Grants (current):	$126,000.00

Total Phase I Estimated Profit or (Loss) with Town Grants: $72,200.00.

6.5.2 Model II Costs and Revenues: One new 18-knot, 49 passenger vessel and one used 15 knot, 49 passenger vessel:

IIA. Initial Capital Costs:

1. New Vessel: 1@ $850,000 =	$850,000.00
2. Used Passenger Vessels: 1 @ $225,000 =	$225,000.00
Total Capital Costs:	$1,075,000.00

IIB Annualized Operating Costs:

IIB Annualized Operating Costs:

1. Vessel Operations:	
- Per hour per vessel: @ $220/hr	
- Per year: 2473 hr/yr:	$544,100.00
2. Vessel Maintenance: 1 Used @4% x $225,000 =	$9,000.00
1 New @ 2.5% x $850,000 =	$21,300.00
3. Amortization: 1 used vessel @225,000.00/10yr =	$22,500.00
1 new vessel @ $850,000/10yr =	$85,000.00
4. Dock landing fees:	
- NEH 21,400 Passengers @ $ .50 /boarding	$10,700.00
- SWH 12,300 Passengers @ $.50 /boarding	$6,200.00
Total Annual Operating Costs:	**$698,800.00**

IIC. Estimated Revenues:

1. Passenger Fare Income	
- One-way Fare: (varies)	
- Projected Annual one way trips = 45,940	
- Annual Passenger Revenue:	$494,400.00
2. Hand Freight Income	
- Freight Rate: (varies)	
- Freight Units/yr:	
-Annual Hand Freight Revenue	$41,600.00
Total Scheduled Ferry Direct Revenues/year:	$536,000.00

IID. Operating Profit or Loss from Scheduled Ferries without Town Grants

1. Annual Operating costs	$698,800.00
2. Fare and Freight Revenue:	$536,000.00
Profit or (Loss) without Town Grants:	($162,000.00)

IIE. Town of TCI and Other Current Grants/Subsidies to Ferry Operator

1. MDOT:
2. TCI
3. USPS Mailboat

Total Increased Town Grants and Subsidies	$156,000.00

IIF. Operating Profit or Loss from Scheduled Ferries with Town Grants

1. Annual Operating costs	($698,800.00)
2. Fare and Freight Revenue:	$536,000.00
3. TCI and Other Grants (increased):	$156,000.00
Total Phase I Estimated Profit or (Loss) with Town Grants:	**($6,200.00)**

6.5.3 Model III Costs: Two new (21-knot, and 15 knot), 49 passenger vessels

IIIA. Initial Capital Costs:

1. New 21-Knot Vessels:	$1,100,000.00
2. New 15 knot Vessel:	$800,000.00
Total Capital Costs:	$1,900,000.00

IIIB Annualized Operating Costs:

1. Vessel Operations:	
- Per hour per vessel: @ $240/hr	
- Per year: 2221 hr/yr:	$533,100.00
2. Vessel Maintenance: 2 New @ 2.5% x $1,900,000 =	$47,500.00
3. Amortization: 2 new vessels @ $1,900,000/10yr =	$190,000.00
4. Dock landing fees:	
- NEH 21,400 Passengers @ $ .50 /boarding	$10,700.00
- SWH 12,300 Passengers @ $.50 /boarding	$6,200.00
Total Annual Operating Costs:	**$787,500.00**

IIC. Estimated Revenues:

1. Passenger Fare Income	
- One-way Fare: (varies)	
- Projected Annual one way trips = 45,940	
- Annual Passenger Revenue:	$494,400.00
2. Hand Freight Income	
- Freight Rate: (varies)	
- Freight Units/yr:	
-Annual Hand Freight Revenue	$41,600.00
Total Scheduled Ferry Direct Revenues/year:	**$536,000.00**

IIID. Operating Profit or Loss from Scheduled Ferries without Town Grants

1. Annual Operating costs	$787,500.00
2. Fare and Freight Revenue:	$536,000.00
Profit or (Loss) without Town Grants:	($251,500.00)

IIIE. Town of TCI and Other Current Grants/Subsidies to Ferry Operator

1. MDOT:	
2. TCI	
3. USPS Mailboat	
Total Town Increased Grants and Subsidies	$156,000.00

IIIF. Operating Profit or Loss from Scheduled Ferries with Town Grants

1. Annual Operating costs	($787,500.00)
2. Fare and Freight Revenue:	$536,000.00
3. TCI and Other Grants (increased):	$156,000.00
Total Phase III Estimated Profit or (Loss) with Town Grants:	**($95,500.00.)**

6.6 Summary Findings from Cost Model

Financial Model Results:

The financial model indicates that the profitability of the consolidated ferry service is related closely to the capital investments in combinations of new and used vessels, and rates of TCI grants and subsidies. The analysis above used the current TCI grant and subsidy rate for Model I, and the moderately increased rate for Models II and III. A target for a public/private passenger ferry operation profit is generally 10% after all accountable costs and revenues. With current and increased subsidies, only Model I achieved the minimum profitability level.

- Model I with two used vessel capital investments would yield an annual profit of 41% (+$72,200.00) with current grants.
- Model II with the addition of 1 new 18-knot vessel would yield a small annual loss of less than 1% (-$6,200.00) with small increased grants. Additional grants and/or fare increases of $69,300.00 would be needed to provide a 10% profit.
- Model III with construction of new 21 knot and 15 knot vessels would yield a substantial annual loss of -12% (-$95,500.00) with the increased grant, and would require significantly increased grants and fare increases of $174,200.00 to achieve a 10% profit position.

The Table summarizes profitability rates by model for several different levels of TCI ferry subsidy including; 1) the current aggregate grant and subsidy level of $126,000.00, 2) a modest increase of grants to $156,000.00 per year, and 3) combinations of increased grant and fare levels to allow for a 10% profit margin.

Summary of Financial Model Profit or Loss by Model with Varying TCI Grant and Fare Levels

Action Plan Phase	Operating Costs/Yr	Operating Revenues/Yr	TCI Grants & Subsidies/Yr	Annual Profit or (Loss)
Model I; 2 Existing Vessels @$450,000.00	($589,900.00)	$536,100.00	$126,000.00* $156,000.00**	**$72,200.00*** **+12.2%** **$102,200.00**** **+17.3%**
Model II: 1 New+ 1 Existing Vessel @ $1,075,000.00 **A) with added subsidy only** **B) with added subsidy and higher fare revenue** **C) with fare increase only**	($698,800.00)	$536,100.00 + 34,650.00 +6.5% 69,300.00 +13%	$126,000.00* $156,000.00** + $69,300.00 + 34,650.00	**(-$36,200.00)** **19.1%** **($-6,200.00)** **(-1.0%)** **+ $69,880** **+10%** **+ $69,880** **+10%** **+ $69,880** **+10%**
Model III: 2 New Vessels @$1,900,000.00 **A) with added subsidy only** **B) with added subsidy and higher fare revenue** **C) with fare increase only**	($787,500.00)	$536,000.00 $87,100.00 +16.2% $174,200.00 +32.4%	$126,000.00* $156,000.00** $174,200.00 $87,100.00	**(-$125,500.00)** **(-15.9%)** **(-$95,500.00)** **(-12.1.8%)** **$78.800.00** **+10.0%** **$78.800.00** **+10.0%** **$78.800.00** **+10.0%**
* current TCI grants **with increased MDOT $/USPS				

Findings and Conclusions from Financial Model

While the financial model is only approximate and more refined data is needed that for an actual operator financial pro forma, it provides a useful contrast of several models with varying capital and operating costs. The model also helps understand the relative importance of different variables such as ridership rates, operating costs for different seasons, passenger and freight fare revenues, capital costs and maintenance costs. A list of preliminary conclusions would include the following:

- The capital costs of using used or new vessels or a combination of the two appears to be the major financial feasibility factor.
- Model I: The lower initial cost of two used vessels can result in a profitable single operator system with current grant and subsidy levels. The model can also serve as a first phase of Model II, by using one of the 15-knot vessels as a backup.
- Model II: The disproportionate additional cost of a new 18-knot vessel would require a combination of added subsidy/grant levels and fare increases. However, the profitability is within reach and could be improved somewhat by the sale of one of the used vessels.
- Model III: The added capital costs of building a second new vessel, (which would be used primarily as a back-up) would create a much larger loss gap to overcome, and appears to be less feasible. It should be noted that any time and cost gains from the faster vessel are negligible, and a model with a new 18 knot and 15 knot vessel would have similar profit/ loss profiles.

Based on the preliminary financial model findings, a recommended operations plan could include Model I as a first phase and Model II as a second phase with a combination of gradually increased fares and added subsidies to offset the higher capital costs of building one primary new 18 knot vessel.

Several other observations that might affect financial feasibility would include:

- The projected current ridership levels of peak period summer ridership might suggest the need for either 1) a higher capacity vessel of 65 to 75 passengers to accommodate peak periods, or 2) added scheduled runs on expected peak days. The added runs with smaller 49 passenger backup vessel is likely to be far more cost effective in both operating and capital costs, than building a larger vessel which would be underutilized most of the year. The model assumes the added runs of 49 passenger vessels.
- Though unlikely, if ridership demand increased between Phase I and construction of the first new vessel, the new vessel could have higher capacity (65 to 75).
- Standard marine amortization costs indicate that a longer-term contract agreement is necessary to allow for purchase of existing and new vessels. A minimum term of 6 (with renewable contract) to 10 years seems necessary for an operator to absorb capital costs.
- Current operating costs are likely to be affected by changes in fuel costs and/or crew costs over time.
- Landing fees at NEH and SWH appear to be a relatively small annual cost variable, but rates could be revisited.
- TCI grant and subsidy rates for some sources such as MDOT/FTA grants and mailboat contracts could be increased based on costs of operation. While MDOT commuter rate increases will also increase the TCI match proportionally, such grants will be key to keeping fare and freight rates affordable for island residents.
- Based on estimates of passenger and freight revenues by season, the peak summer month revenues are clearly needed to offset operation costs during the off-season and particularly the winter months.
- Incorporating heavy freight/barge service appears to be incompatible within the single operator passenger and hand freight financial model, because of disproportionate vessel capital and operating costs. The barge freight services are only partially attributable to TCI needs whereas the passenger and hand freight services would be dedicated exclusively to the three islands.
- The financial model can provide useful cost figures for formal requests for additional MDOT grants for year round resident commuter and freight services consistent with grants to other year round island communities.
- While the model indicates that one new vessel could be absorbed by current revenue streams, the disproportionate capital and maintenance costs for two new vessels suggests possible consideration of a non-profit status for the designated operator (similar to Isle au Haut and Chebeague operators) if it would allow for more favorable public or private capital grants and contributions.
- The most sustainable phased financial model would be:
    - Phase 1 with two used (15 years or newer) 15 knot 49 passenger vessels for a maximum of 4 years as part of a 10-year franchise by TCI. Supported by current or moderately increased subsidies and grants.
    - Phase 2 with 1 new 18 knot 60 to 75-passenger vessel with one used 15 knot 49 passenger vessel (from Phase I) within 4 years during 10-year franchise by TCI. Supported by moderately increased subsidies and grants.

7. ACTION PLAN AND IMPLEMENTATION SCHEDULE

7.1 Recommended Management Plans

7.2 Implementation Steps and Schedule – authored by Ron Axelrod

7.1 Recommended Ferry Service Management Plans

The passenger ferry service should be consolidated as a single operation, under contract to the Town, with the de provider running all year round and seasonal passenger and hand freight service connecting the islands of Great C Islesford, and Sutton, to the mainland at Northeast Harbor (NEH) and Manset in Southwest Harbor (SWH). Afte was recommended that the provision of essential barge or landing craft operations for vehicles and larger freight remain as a separate private service by multiple operators.

7.1.1 Operations Requirements: The operations contract for the designated single operator would include:

A. Exclusive assigned docking rights for the passenger ferry service to land and depart at TCI, based on a re revised Docking Ordinance being developed by TCI.
B. Financial subsidy combining the ME-DOT Commuter subsidy, current TCI subsidy match as part of the C agreement TCI school transportation subsidy, and USPS mail contract. Currently estimated at approxima
C. Other subsidies from public and private entities.
D. Agreements for long term landing rights in NEH, and/or SWH (upper) that will meet the Town's needs d winter seasons.
E. Requirements of the operation, including, route plan, vessel requirements, fare levels, and accountability specified in the report of the task force.

7.1.2 New Service Management Options: From the June 25th GCI and Aug. 29th, 2015 TTF Workshops that foc ferry service management, three different options developed. The Town needs to decide on one of three possible options for a single passenger ferry operator recommended by the TTF for Town consideration:

1. A Town owned service (docks, vessels, freight contracts and subsidies) with a provider contracted for op

2. A Town franchise with a designated single for-profit private service provider with operational requiremer grants;
3. A Town franchise with a single designated non-profit provider with operational requirements and subsidy concept to the current Isle au Haut and Chebeague services.

Operation Description		Ferry Service Components	Dock Management	Public/Private Funding	Advantages	Disadvantages
1	**Town Owned Service**	-Town regulates dock landing slots with requirements: - minimum fees /fares - CG vessel inspection	- Town controls dock landing slots for all ferries. -TCI Town ferries have priority landing rights. -Private ferries and water taxis apply to town for remaining landing slots. -Hand freight (except carry-on) excluded at peak seasonal periods -Town attaches safety and fare requirements to landing rights	-Town secures long term State commitment for commuter ferry subsidy. -Town secures rights from US Postal -School Transportation subsidy directed to town	-Town has complete control of their own ferry passenger operations -Least cost to town resident fares as town does not need to make a profit.	- Three member paid town for oversight. - Difficult to raise money vessels and NE landing rights. -Town upgrades Islesford
	Year Round Service operated by town selected provider					
	Town contracts with a captain who hires staff to operate the service. Town provides yearly sallies and benefits to captain and staff, vessels based on route and capacity specifications. Town establishes three person paid oversight Board to monitor management operations					
	-Year Round Freight Remains Private					

	-Water Taxi and Emergency On- Call Remain Private					
2	**Single Operator for- profit operator designated by TCI** Year Round Service operated by town-selected provider through a bid process. - -Similar to current Commuter contract bid but expanded to include service TCI to NEH, Manset/SWH -Year Round Freight, Water Taxi, and Emergency On-Call Remain Private 10 year initial contract renewable	-Town contracts for combined year round commuter, passenger and mailboat service. -All vessels privately owned and maintained: - Commuter - Mailboat - Seasonal -- -Passenger - Freight - Water taxis - Emergency On-Call	- Town controls dock landing slots for all ferries. -TCI Town ferries have priority landing rights. -Private ferries and water taxis apply to town for remaining landing slots. -Hand freight (except carry-on) excluded at peak seasonal periods -Town attaches safety and fare requirements to landing rights	-Subsidy given to operator with conditions for fares and operations. -Town secures long term State commitment for commuter ferry subsidy. -Town secures rights from US Postal -School Transportation subsidy directed to town	-	-
3	**Single Operator Non-Profit Management (Modeled after Isle au Haut and Chebeague**	- All passenger vessels privately owned and maintained by Non-profit -Non-profit has option to acquire	- Town controls dock landing slots for all ferries. -TCI non-profit ferries have priority landing rights.	-Subsidy given to non-profit with conditions for fares and operations. -Town secures long term State	-Town and Non-profit secure long term State/Federal	-Town secures landing rig non-profit

	Ferries)	vessels or equipment with state/federal funding in future	-Private ferries and water taxis apply to town for remaining landing slots. -Hand freight (except carry-on) excluded at peak seasonal periods -Town attaches safety and fare requirements to landing rights	commitment for commuter ferry subsidy. -Town secures rights from US Postal -School Transportation subsidy directed to town		
	Year Round Service operated by non-profit And modeled on Isle au Haut and Chebeague Ferry Operations.					
	-Year Round Freight, Water Taxi, and Emergency On-Call Remain Private					

7.1.3 Governing and Accountability

Each of the three operational models above has slightly differing oversight or governing models, and the account for safe, reliable, cost effective, and personal service by the ferry operator.

1. **Town Owned Service –** a three to five person paid governing Board would oversee and be accountable for th performance of the passenger ferry service. Some characteristics of the Board would be:

A. A representative of the TCI Harbor Committee would chair board. Other members would include landowners who have at least five years of large vessel experience in or around Mount Desert wat
B. The Board would meet quarterly to review monthly safety checklists, arrival and departure perfor counts, and other pertinent information.
C. A yearly review would be presented at the annual Town Meeting focusing on safety, reliability, p cost.
D. The town Clerk will audit income and expense statements submitted by the operator, and make su required.

2. **Single Operator for- profit operator designated by TCI-** this service would have minimal town oversi Board of Selectmen and the Town Clerk will have responsibility to collect quarterly information. Some o will oversee are:
    a. The BOS would review quarterly, monthly safety checklists, arrival and departure performance, p and other pertinent information.
    b. A yearly review would be presented at the annual Town Meeting focusing on safety, reliability, p cost.
    c. The town Clerk will make subsidy payments as required.

3. **Single Operator Non-Profit Management (Modeled after Isle au Haut and Chebeague Ferries) –** th independent non-profit corporation- 501-C3 that would operate the passenger ferry service. The Board of non-profit would be TCI residents, land owners, and experienced captains, fishermen, and others familiar waters.

7.2 Implementation Steps and Schedule – authored by Ron Axelrod, Chair MAC/ Trans Force

Based on the Operations Requirements enumerated above and selection of one of the Management Options, the t Board of Selectmen and the Municipal Advisory Commission devote attention and focus to implementing a Cons Ferry Service for the town in 2016.

The Board of Selectmen must take a leadership position to provide for a replacement of the current system of fou providing various passenger ferry service to and from TCI into one consolidated service as recommended by the Task Force in December 2015. This positive position by the BOS will set in motion a number of steps to plan an service. This will take the following steps:

A. The Board of Selectmen, and their staff assistant, currently Jim Fortune, devote full attention to the most transportation need of TCI, safe, reliable, and cost effective passenger ferry service to the mainland- NEH Manset/SWH. **This should start with the April 2016 BOS meeting where the BOS will adopt and co Recommendation for a Consolidated Passenger Ferry Service to be implemented in 2016/2017**

B. The MAC will focus their 2016 agenda on one major item: support to the BOS on the implementation of Recommendation.

C. The Board of Selectmen must get full disclosure from Beal and Bunker of their plans for continuing ser that the town may plan for the consolidated passenger ferry service.

Over the past year from July 2015 to the present, there has been uncertainty as to regular ferry service between T When Beal & Bunker in early July 2015 mentioned to Selectmen Beal that they did not expect to continue servic 2015, the TTF spent two months planning for interim ferry service. Then in October 2015, information from MD quoting David Bunker that he would not suspend service without notice. There is uncertainty of length of contin operations as most of status and workings of Beal & Bunker are by rumor.

D. The MAC and BOS must make connections and advocate on the town's behalf to the Marine Managem and the Town of Mount Desert Board of Selectmen that they work together towards a year-round consoli ferry service designated by TCI to replace the landing slots that were assigned to Beal and Bunker.

The Town of Mount Desert Marine Management Committee is contemplating changes to their Harbor Ordinance rights for TCI and vessels that are sold. This is a major impact on TCI's accessibility to NEH and potential opera serve TCI. **There are members of the MAC, Town of Mt. Desert Board of Selectmen and Marine Managem who have strong and positive connections to TMD/NEH and TCI, and these individuals are the most appr facilitate this link and secure a town to town passenger ferry landing. This "sub-committee" of these orga guide the changes to the WMD/NEH Harbor Ordinance.**

The timeline of tasks are as follows:

April 5, 2016 BOS meeting adopts the MAC/Transportation Task Force Dec 2015 Recommendation of a C Passenger Ferry Service to serve TCI, NEH, and Manset/SWH to be implemented over 2016 to 2017.

If this is voted in the affirmative, a number of items shown below must be done. The BOS and MAC will need th Town counsel and water transportation planner. These two individuals developed a list of documents to prepare a

a budget of approximately $20,000 to the MAC in January 2016. It was not included in the Town Warrant; how forthcoming Special Town Meeting, this proposal for services should be presented for a town vote.

April/May 2016, MAC and TCI BOS appoint representatives to meet with TMD/NEH Selectmen and Mar Committee towards working out agreements for passenger ferry service designated by TCI to land at NEH MOST IMPORTANT ITEM TO SECURE TCI PERMANENT SERVICE TO NEH.

April-June 2016, TCI's Harbor Committee finalize changes to the Harbor Ordinance developed at Feb. 29 MAC/Harbor Committee workshop facilitated by the Island Institute. The final changes will be presented at a and then must be voted on at a Special Town Meeting or the next Town Meeting.

April to July 2016, a subcommittee of the MAC working with the BOS must consolidate the existing finan

- The USPS mail contract must be secured in the name of TCI. This should be done with the help of our Bruce Poliquin and one of our Maine Senators.

- The existing ME-DOT/Federal Transit Administration Commuter contract must be expanded in with ME-DOT and seek other sources of funds to help subsidize the fares of the new consolidated ferry service.

June 2016, the MAC will hold a workshop/s to determine which of the three operational models the town overseeing the new passenger ferry service.

July to September 2016, Bid consolidated passenger ferry service 10-year contract. The MAC and BOS wit counsel and water transportation consultant prepare specifications and bid documents based on the operational m the town at the workshop.

This is a roadmap to developing the consolidated passenger ferry service. The dates may ch adjusted, and a plan must go forward to resolve the current unknowns and develop a safe, economical passenger ferry for TCI for a ten-year contract and beyond.

DRAFT March 30, 2016