

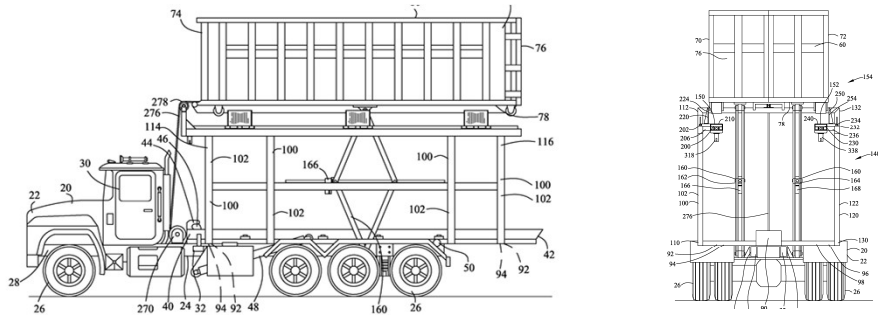
DUMPLEX[®] & FREIGHTPLEX[®] ROLL-OFF SYSTEMS

MORE WITH THE SAME, THE SAME WITH LESS[™]

VISION

Dumplex® Roll-off Systems

Dumplex® and Freightplex® are patented next-generation roll-off truck systems that will safely complete dumpster, compactor, tank, and container exchanges in under 7 minutes, vs. over 20 minutes with today's technology. Dumplex® eliminates costly and time-consuming 'round-trip' exchanges and has been successfully vetted by mechanical, structural and automotive engineers.



More With The Same, The Same With Less™

- Reduce load/unload time by at least 70%.
- Reduce fleet size and driver count by 25% while maintaining current haul capacity or increase haul capacity without adding new drivers or trucks.
- Save over 20% annually on operating and capital expenses with a higher utilization rate.
- Eliminate unnecessary round-trip exchanges.
- Retrofit existing fleet to extend useful life.

ROLL-OFF TRUCKS HAVE NOT EVOLVED SINCE INCEPTION

Efficiency & Cost

- Lack of space necessitates inefficient and costly 'round-trip' exchanges where two visits are necessary to retrieve a full dumpster and deliver an empty one.
- Waste service customers have not had a choice as no technology existed to eliminate round-trip exchanges.
- The resulting carbon footprint for roll-off services is intensified with more mileage and more vehicles on the road due to inefficient round-trip exchanges.

Safety

- The longer drivers are outside of the truck the higher the chance of injury.
- Roll-off truck drivers are especially vulnerable to injury due to the frequency and duration of outside-the-cab procedures.




THE DUMPLEX SOLUTION

Solving Roll-off Challenges

- Save OpEx/CapEx and optimize fleet utilization
- Increase revenue with competitive bidding advantage
- Increase driver safety with less time outside of cab
- Decrease carbon footprint with fleet optimization
- Decrease required daily range to enable roll-off fleet electrification

Licensable Design Leveraging Existing Ecosystem

		 US010322874B1	
(12) United States Patent Curley	(10) Patent No.: US 10,322,874 B1	(45) Date of Patent: Jun. 18, 2019	
(54) DUMPSTER HANDLING DEVICE AND METHOD	(56) References Cited	U.S. PATENT DOCUMENTS	
(71) Applicant: Mark D. Curley , Tampa, FL (US)	1,573,172 A * 2/1926 Laffey B60P 1/02	187/268	
(72) Inventor: Mark D. Curley , Tampa, FL (US)	2,953,410 A 9/1960 Chaney		
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 33 days.	3,049,378 A 8/1962 Nelson		
	3,202,305 A 8/1965 Dempster et al.		
	3,362,552 A 1/1968 Thiele		
	3,499,562 A 3/1970 Phillips		
	3,612,315 A 10/1971 Blackburn		
(21) Appl. No.: 15/483,609	3,998,491 A * 12/1976 Diem B60P 1/34	298/11	
(22) Filed: Apr. 10, 2017	4,005,784 A 2/1977 Wilson	(Continued)	

OPERATIONAL DEMONSTRATION OF EXCHANGE PROCESS

Comparison of Exchanges

Dumplex Exchange <7 Minutes

All Other Exchange 20 Minutes



Full Demonstration Video | <https://www.youtube.com/watch?v=eGXRw6UEIfA>

BUSINESS MODEL

Asset/Capital Light – R&D + Marketing

- Granted US patents 10,322,874, 10,850,657, and 11,117,741 with 2037 expiration dates.
- Certified engineering drawings by JNE Engineering.
- Engineering opinion on compliance and safety issued by automotive engineer at Ameche Designs.
- Direct marketing to end users with established contacts from customer discovery will aid channel partners.

Contract Manufacturers as Channel Partners

- Roll-off truck body manufacturing in North America is fairly consolidated with the top 4-5 firms supplying most of the top 100 waste management companies.
- Partnering with a small number of top firms grants access to most of the TAM.
- Licensing structure incentivizes truck body manufacturing volume to facilitate growth in market penetration.

MARKET OPPORTUNITY

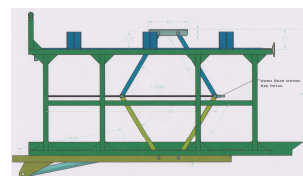
North American Roll-off Truck Fleet

- The Motor Carrier Management Information System indicates there are ~412K garbage, refuse, and trash trucks in North America | <https://ai.fmcsa.dot.gov/RegistrationStatistics/CustomReports#RegData>
- Available data from the largest haulers indicate their fleet is about 21% roll-off trucks.
- We estimate the North American roll-off fleet to be **86,520** trucks.

Total Addressable Market

- We estimate the maximum sustainable price of a license to be \$15,000. This is based on our use case analysis and provides for a 20%+ fully amortized annual savings.
- We have set a minimum license price of \$5,000 and will negotiate price based on a tiered volume system.
- At a license price of \$15,000 the total addressable market is **\$1.298 billion** (\$129.8 million per year based on 10-year replacement).

MARKET OPPORTUNITY



	License	Roll-off Truck Body	Roll-off Truck
Existing Fleet	86,520	86,520	86,520
Unit Price	\$15,000	\$65,000	\$196,902
Existing TAM For Retrofit	\$1,297,800,000	\$5,623,800,000	\$17,035,961,040
Annual Fleet Replacement*	8,652	8,652	8,652
Annual New Body TAM	\$129,780,000	\$562,380,000	\$1,703,596,104

* Assumes 10 year replacement schedule

DIFFERENTIATION/COMPETITION – COMPARISON PRO FORMA

24 Trip Per Day Capacity			4 Truck Capacity		
	Incumbent	Markoni		Incumbent	Markoni
Trucks	4	3	Daily Trip Capacity	24	32
Drivers	4	3	Annual Trip Capacity	6,000	8,000
Daily Miles Driven ¹	700	600	Daily Miles Driven ¹	700	800
Annual OpEx Total ²	\$ 470,964	\$ 366,723	Annual OpEx Total ²	\$ 470,964	\$ 488,964
Cab-Chassis ³	\$ 527,608	\$ 395,706	OpEx/Trip	\$ 78.49	\$ 61.12
Roll-Off Body ⁴	\$ 140,000	\$ 195,000	CapEx/Trip (10 Year Amort)	\$ 11.13	\$ 9.85
CapEx Total	\$ 667,608	\$ 590,706	10 Year OpEx + CapEx/Trip	\$ 89.62	\$ 70.97
10 Year OpEx + CapEx	\$ 5,377,248	\$ 4,257,936	Dumplex/Freightplex Savings		20.8%
Dumplex/Freightplex Savings		20.8%			

1. Assumes average speed of 30 m.p.h and one dump trip per truck, per day.

2. Driver comp. \$86,241/yr, diesel \$0.50/mi, repairs & maintenance \$0.12/mi, insurance \$0.05/mi, other \$0.05/mi. 250 work days/yr.

3. 2020 Freightliner 114SD Cab Chassis, \$131,902. 4. Incumbent roll-off body \$35,000; Dumplex roll-off body \$65,000 (estimate).

TRACTION/CUSTOMER DISCOVERY

Waste Management Companies – End Users

- Major North American waste management companies have expressed interest.
- They have indicated willingness to demo production prototype.
- No/low-cost leased demo to haulers in exchange for operational data and acknowledgement of program for marketing purposes.

Truck Body Manufacturers - Licensors

- Truck body manufacturers have indicated willingness to produce Duplex system.
- Have indicated that they need customers to prove market exists for this product.
- Will issue limited number of no/low-cost licenses to establish product in the marketplace.

MILESTONES/ROADMAP



TEAM/ADVISORS

Mark Curley Inventor

Mark has been developing and perfecting the Duplex concept since 1987. In addition to being an inventor he is a published author, columnist, former vice-president, radio talk show host, and singer/songwriter.

Mark's experiences and dedication have enabled him to shepherd his creation from concept to reality and has cleared the path for commercialization.

Charlie Parker Commercialization Consultant

Charlie is the founder and principal consultant of Ratel Consulting. He advises numerous companies in the mobility and sustainability areas on product commercialization. His specialty lies in forming development partnerships with large corporations.

He is a founding member of the Green Finance Institute's Coalition for the Decarbonisation of Road Transport (CDRT).

Brendan Murphy Licensing/IP Consultant

Brendan is an experienced and highly regarded attorney in the fields of medical device, telecommunications, computer science, biotechnology, and pharmaceuticals.

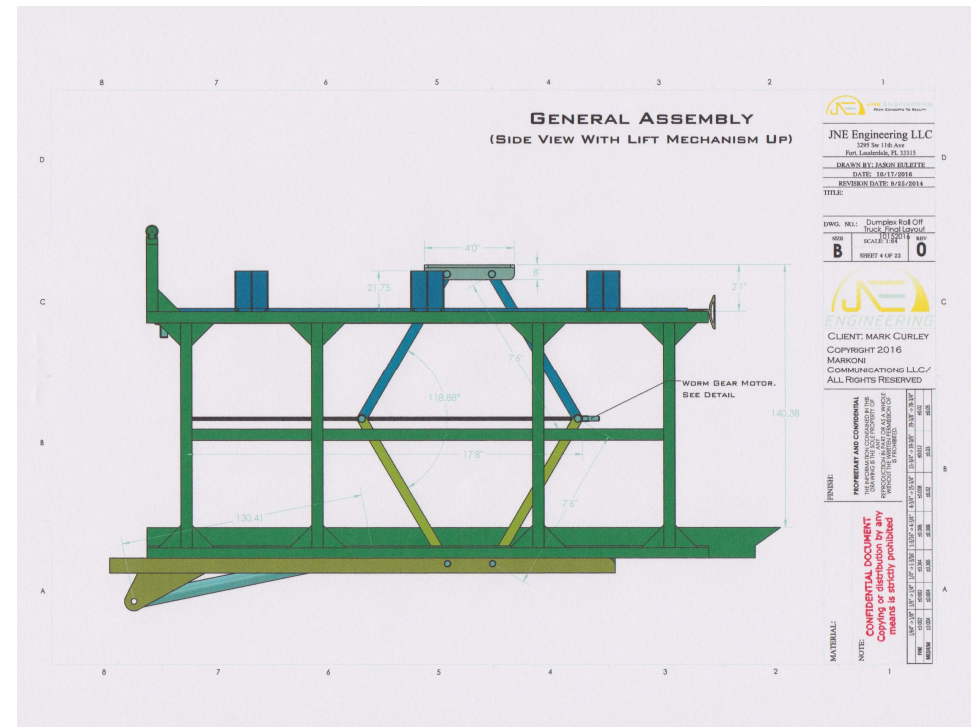
In addition to licensing, collaboration agreements, and patent filings he has litigated and negotiated master service agreements, non-disclosure agreements, and trade secrets.

He is a member of the Massachusetts Bar Association.

ASK/FUNDING

Derisked Seed Round

- \$1,000,000
- 4-5 Commercial Prototypes
- \$300,000+ already invested by inventor
- Technology Readiness Level 4
- Off-the-shelf components do not require any further technology development
- Strong IP protection



CONTACT INFORMATION

Mark Curley
Inventor

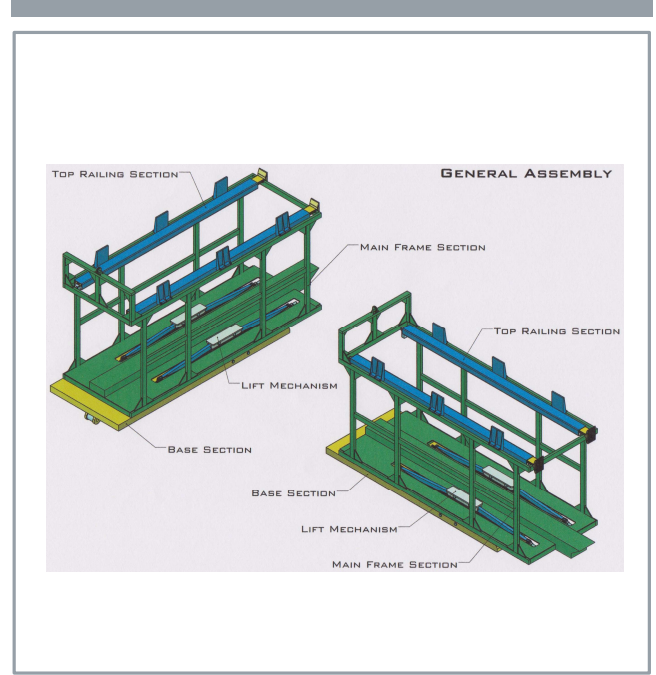
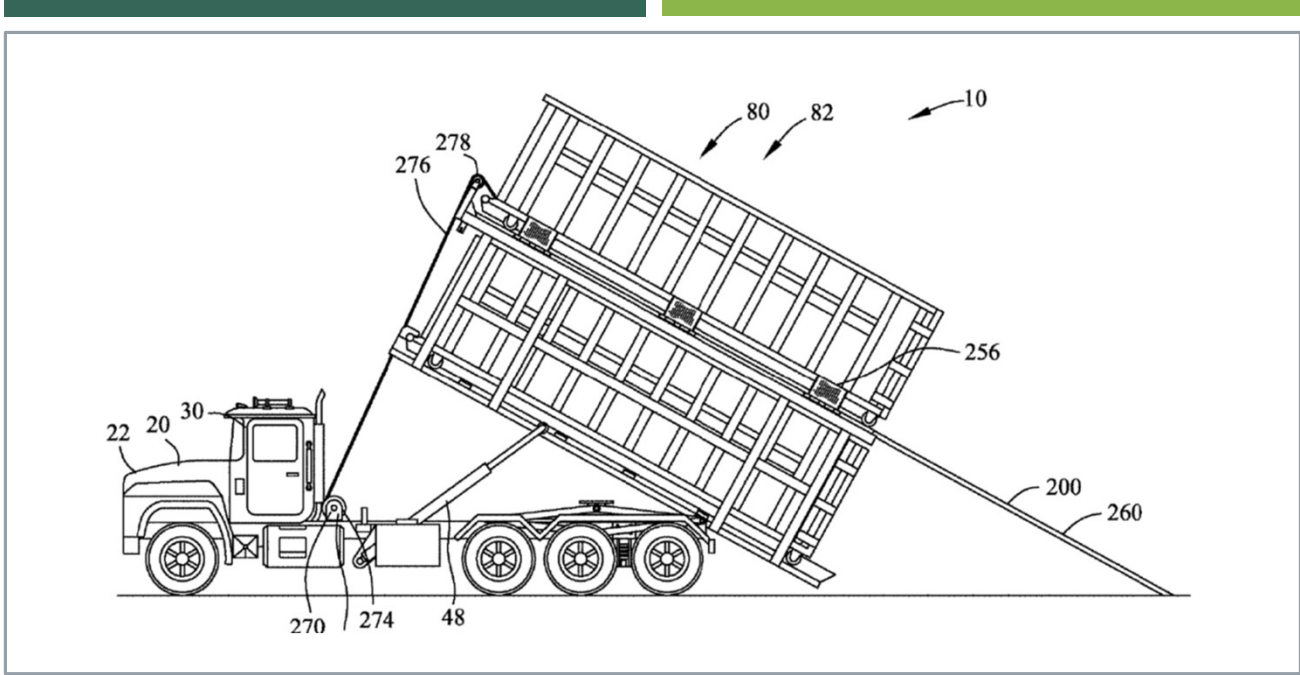
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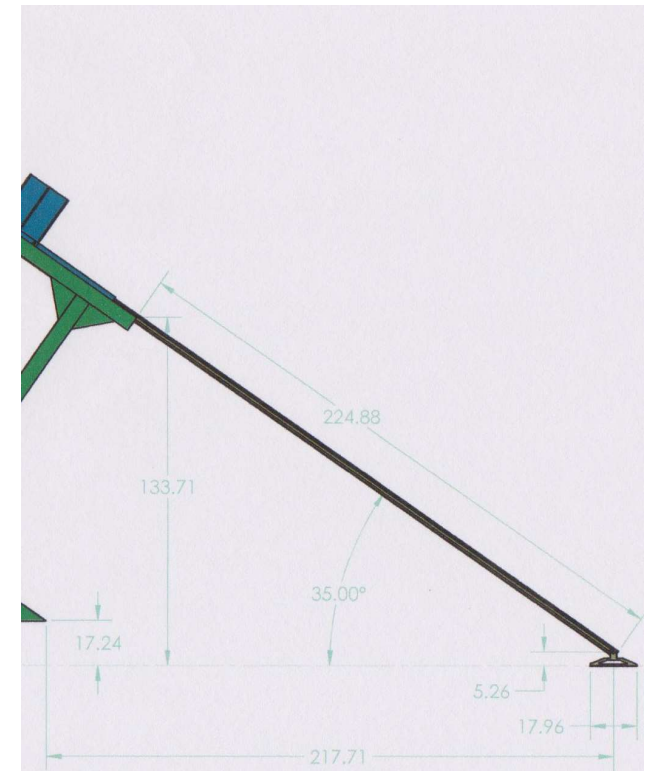
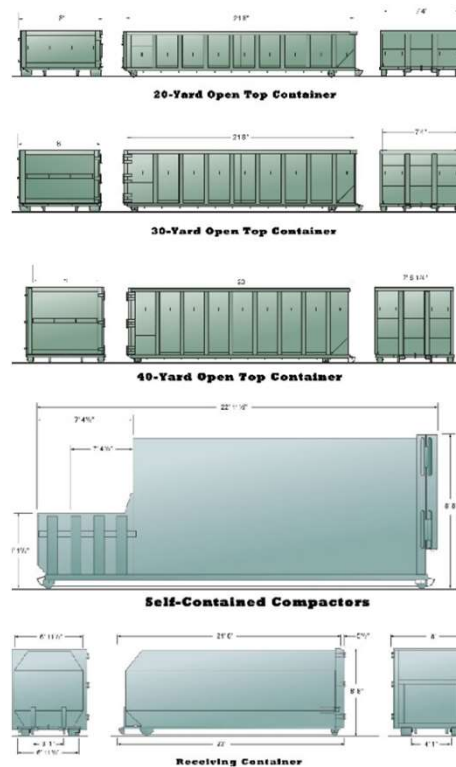


APPENDIX

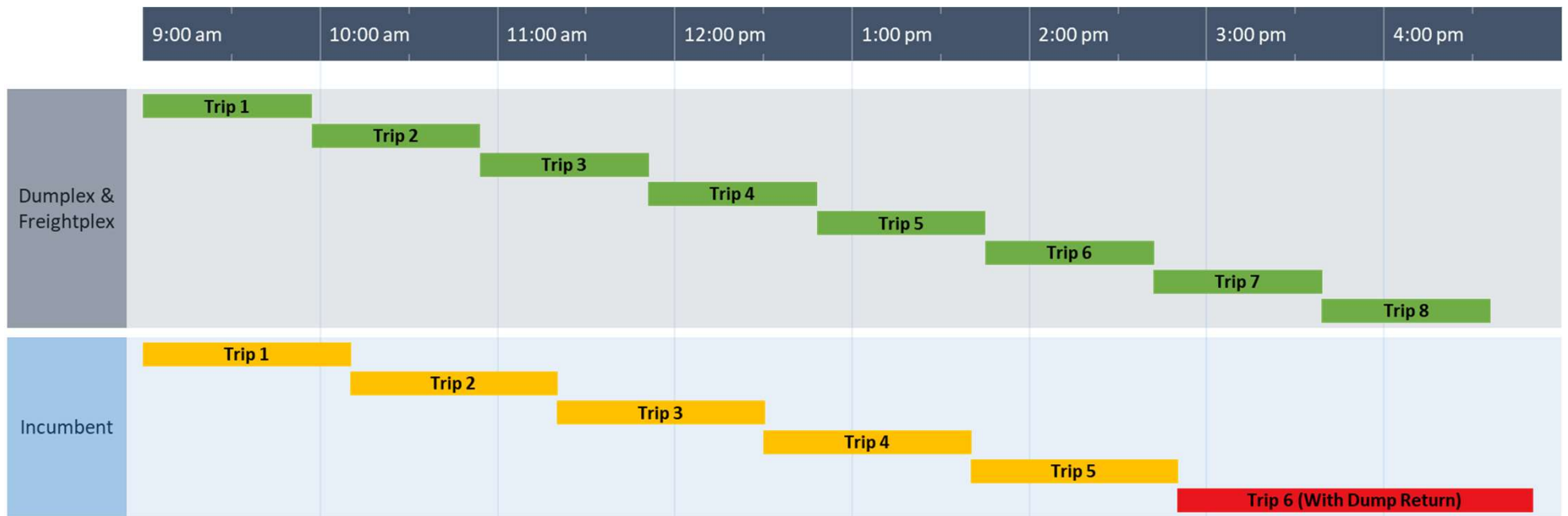
CONTAINER CAPABILITY & OPERATIONAL ENVELOPE

Dumplex and Freightplex were conceived and designed for adaptability without sacrificing functionality. The system can be used with all common roll-off waste containers including 20, 30, and even 40 yard open top containers as well as compactors. The system also works with specialty containers like dewatering and vacuum tanks for hazardous waste.

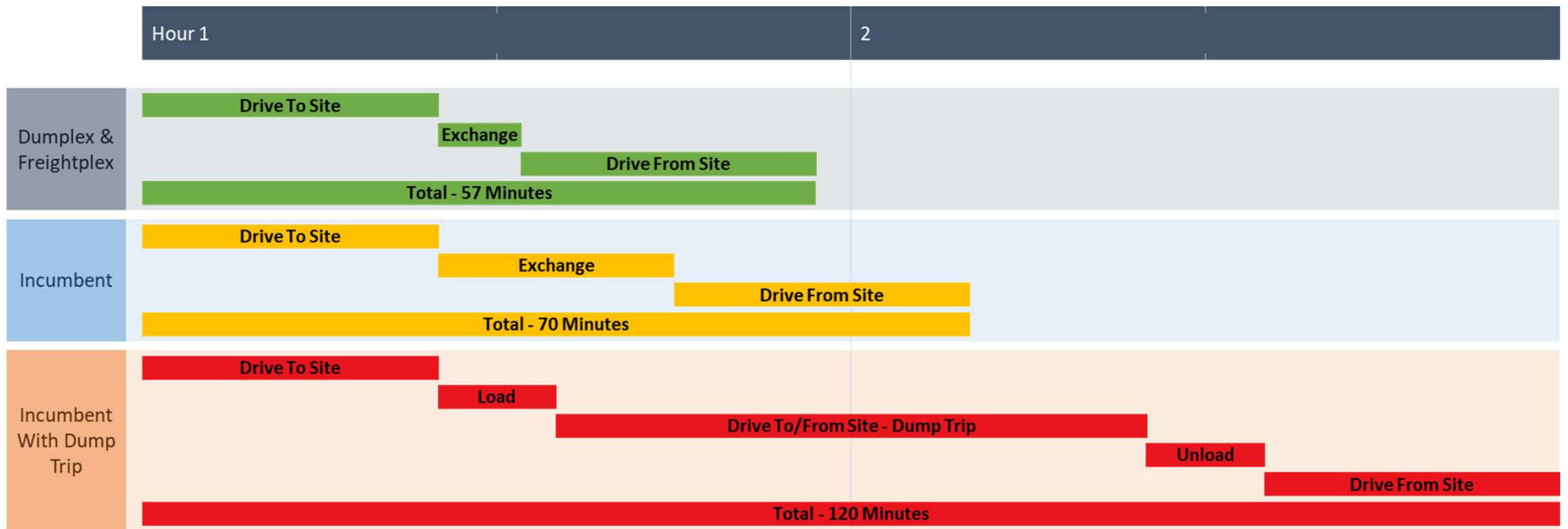
Minimal additional runway (approximately 19 feet) is needed for container exchanges.



DAILY SCHEDULE



TRIP TYPE DETAILS



FREQUENTLY ASKED QUESTIONS

- **WHAT IS THE WEIGHT AUGMENTATION?** – We estimate a maximum of 1,000-1,500 pounds of additional weight compared to a traditional roll-off body, depending on final design.
- **WHAT ABOUT STABILITY DURING LOAD/UNLOAD?** - David Ameche of Ameche Designs, an automotive engineering firm in Royal Oak, Michigan reviewed the truck body design. He concluded that the base trucks should be fine with unloading rear-offset weight and there shouldn't be an issue with weight and balance, and unloading the empty with the full dumpster being loaded in the lower bay should not present an issue.
- **HOW DOES TARPING WORK?** – Any commercially available tarping system can be easily adapted to work within the 'cage' and able to accommodate open containers of varying height.
- **WHO WILL MANUFACTURE THIS?** – Any qualified truck-body manufacturer of your choosing. We would license the technology to them. Furthermore, there are no exotic components, and Duplex' unique enhancements can all be fabricated with off-the-shelf parts.
- **CAN THIS BE ADAPTED FOR OTHER USES?** – Absolutely, the inventor envisioned and patented any Duplex or Freightplex variant as a platform where we would work with end-users to further develop any system that utilizes the same core technology.