Quotation/Offer

Applicable taxes are not included.

Name	Price	QTY	Subtotal
Game|Changer Includes count analytics, vehicle classifications, speed data + use of Game|Changer software with unlimited timing plan creation + near miss analytics + 1 single battery w/ charger included (20 hours of data processing time)	$8,000.00	1	$8,000.00
Full Battery Capacity Option w/ Case 1+7=8 total batteries equates to 160 hours of data processing time with hot swappable batteries	$5,800.00	1	$5,800.00
Data Collection Package: w/ 4g LTE Yearly fee for unlimited data collection and analysis with automatic 4g LTE data uploads	$4,000.00	1	$4,000.00
Comprehensive Warranty. Included. 2 Year Hardware, 1 Year Software, 1 Year Technical Support	$0.00	1	$0.00
Accessory Kit Case for all accessories, tools, locks, straps, & camera , etc.	$350.00	1	$350.00
Shipping and Handling	$350.00	1	$350.00
		Total	**$18,500.00**

Signature: _____   Date: _____

Game|Changer

Portable, Battery-Powered, AI Traffic Data Collector

Proposal for

DuPage County, IL

Prepared for:

Stephen Zulkowski

rhythmtraffic.com

From the desk of: Reggie Chandra.

Dear Mr. Stephen Zulkowski:

Thank you for your interest in Rhythm Engineering's traffic solutions.

Per your request, I am attaching a proposal for procuring an AI-powered, portable, battery powered, turning movement counting solution for DuPage County, IL. This solution is powered by artificial intelligence and helps you collect data round-the-clock. The system processes the data in the field and is capable of transmitting the data over a cellular modem to the cloud.

This proposal recommends **Game|Changer**, our advanced and portable data collection system, as the ideal solution to address your data collection challenges. The proposed solution is a battery-powered system designed to deliver precise, real-time insights into pedestrian, bicycle, and vehicle movements, empowering you to optimize traffic flow and enhance safety effectively. Game|Changer provides the comprehensive functionality, including:

● **Automated Pedestrian and Bicycle Counts**: Game|Changer captures accurate pedestrian and bicycle counts using a high-resolution 4 MP camera and edge-based video processing, enabling precise monitoring of multimodal traffic.

● **Automated Turning Movement Counts**: With its advanced video analysis capabilities, Game|Changer offers precise turning movement counts at intersections, allowing you to track vehicle movements and enhance intersection performance.

● **Vehicle Volume, Speed, and Classification**: Game|Changer can measure vehicle volume, speed, and classification data, delivering robust insights to support data-driven traffic management and safety improvements.

Additional key benefits of the **Game|Changer,** our proposed solution, include:

● **Streamlined Setup and Scheduling**: Designed for quick and intuitive deployment, the **Game|Changer** features a user-friendly configuration interface. Staff can specify operational days and times, allowing for targeted data collection with minimal time on-site. This simple setup process reduces labor costs and improves study efficiency.

● **Dependable Power and Portability**: Featuring a rechargeable battery system, **Game|Changer** offers extended operational periods with minimal recharging requirements. Its compact and durable design allows for deployment across multiple sites, making it adaptable for short- and long-term studies.

We believe that **Game|Changer,** our proposed solution, perfectly aligns with the DuPage County, IL's objectives in traffic management. This solution provides the precision necessary for high-quality data

and significantly saves time and cost, supporting your goals for safer and more efficient urban mobility.

The counts are collected in a database for seamless analysis and timing plan generation + near miss analytics coming in the fall of 2025.

I am looking forward to connecting with you soon.

Sincerely,

Signature on file

Reggie Chandra, Ph.D., PE

Founder & CEO at Rhythm Engineering

email: reggie@rhythmtraffic.com

Phone: (775) 400-0216

Game|Changer

UNLIMITED TRAFFIC DATA, UNBELIEVABLE VALUE

PORTABLE | POWERFUL | AFFORDABLE

AI-POWERED TRAFFIC DATA COLLECTION & SIGNAL OPTIMIZATION

- **Pedestrians, bicycles, vehicles** with classification.
- **Unlimited data**, no hourly processing fees.
- **Real-time insights** for smarter traffic management.
- **Extraordinarily Economical:** Collect data around the clock for just pennies an hour.
- **Simplify your workflow** by eliminating manual video uploads and human counting.
- **Proven, award-winning technology** trusted by leading traffic professionals.

rhythmtraffic.com/gamechanger

Advanced Technology

AI TRAFFIC DATA COLLECTION MADE SIMPLE

ONE-PERSON
FIELD
INSTALLATION

AI
EDGE
PROCESSING

IMMEDIATE
CLOUD DATA
TRANSMISSION

COLLECTS
COMPREHENSIVE
DATA

TRANSMITS
DATA
NEAR-REAL-TIME

- Effortless one-person field installation in under 7 minutes.
- AI edge-processing: Zero manual video uploads.
- Immediate cloud data transmission via cellular.
- Collects comprehensive data: vehicles, pedestrians, bicycles, classifications, and speeds.
- Collects, Processes, and Transmits data near-real-time.

VERSATILE APPLICATIONS

Intersections

Arterials

Freeways

Roundabouts
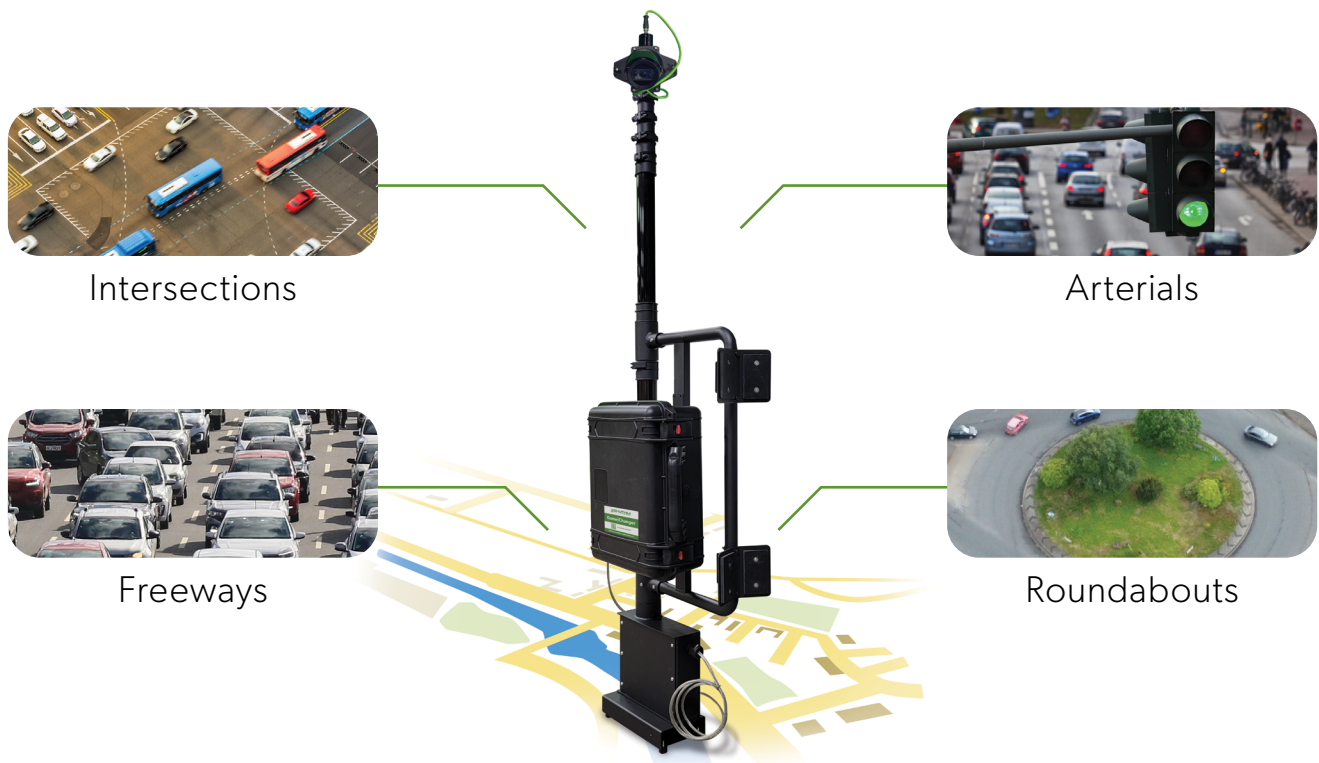
Game-Changing Benefits

UNLIMITED DATA COLLECTION, EXCEPTIONAL AFFORDABILITY

Unlimited, 24/7/365 data at an unbeatable $0.39/hour.

Near-instant data availability for informed decisions.

Accurate pedestrian and bicycle counts to enhance safety and planning.

Over 30 interactive charts and deep analytics dashboards.

Seamlessly generate optimized traffic signal timing plans.

Extendable battery supports up to 100 hours of field analysis.

Time-of-day scheduling flexibility for targeted data insights.

Precise speed study capability for informed infrastructure decisions.

MASSIVE SAVINGS, MAXIMUM EFFICIENCY

- No costly hourly data processing fees.
- Dramatically reduced human resource requirements.
- Complete field processing reduces overall workflow complexity.
- Pays for itself after just one field deployment - enjoy free counts for the rest of the year!

3

Real Results, Real Savings

INDUSTRY-ACCLAIMED SOLUTION

Recognized as the "Best ITS Implementation Project" by ITS Arizona, 2022.
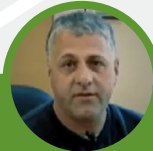
TRUSTED TESTIMONIALS

"It just makes it easier, because now you have real numbers to look at."

Bruce Dressel, Arizona DOT

"Immediate results, impressive ease of use, unmatched support. Rhythm understands our needs."

Matt Schlacter, PE, Columbia County, GA

Any time you call them, they are there to help and guide you step-by-step.

Charles DeVitis, Upper Merion Township, PA

AI technology helps move traffic better. Rhythm Engineering is leading the way in applying AI in traffic engineering.

Bill Henry, PE, Little Rock, AR

ELEVATE YOUR TRAFFIC DATA STRATEGY

REPLACE CUMBERSOME AND COSTLY METHODS—EXPERIENCE UNLIMITED DATA WITH UNBEATABLE AFFORDABILITY.

Discover how AI-Powered Game|Changer can transform your operations today!

Game|Changer

rhythmtraffic.com/gamechanger

Game|Changer

TIMING PLANS   DATA   DEVICES   PROJECTS

Refresh

Arterial Explorer

Search by name

SR347 [6]
- AM Peak 0500-0900
- PM Peak 1500-1900
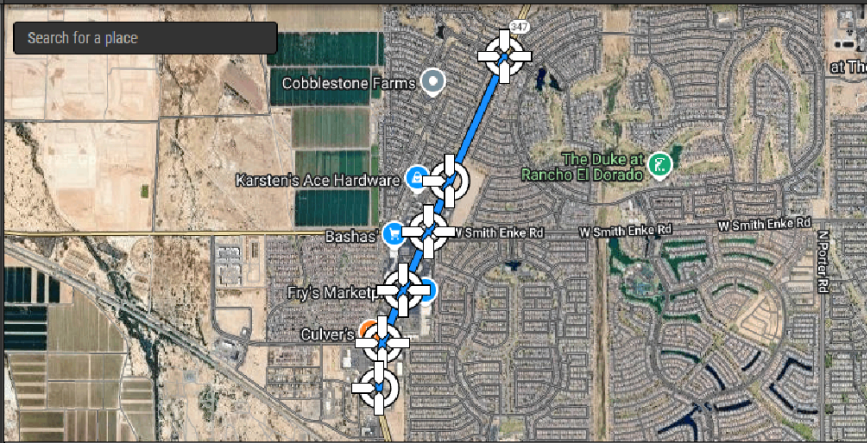- MD Peak 1000-1400
- Off Peak
- Weekend
- New Timing Plan...

95th Street [3]
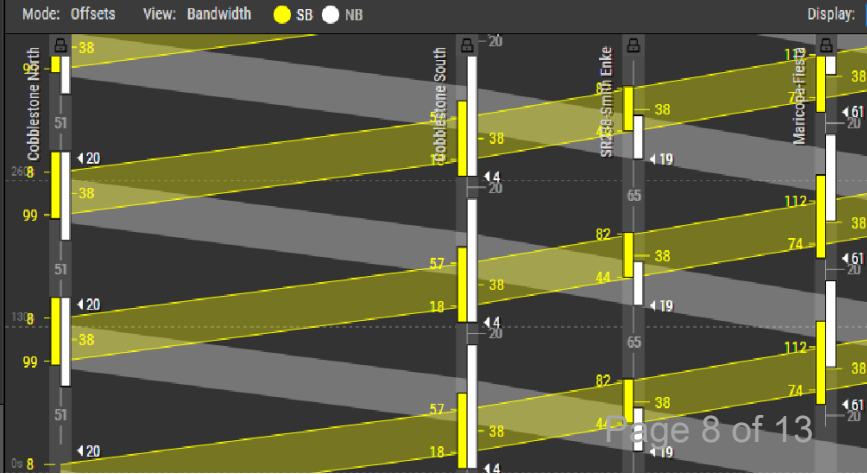Broadway [1]
New Arterial...

Map

New Intersection

Map: Base map | Satellite

Search for a place

Cobblestone Farms
Karsten's Ace Hardware
Bashas'
W Smith Enke Rd   W Smith Enke Rd   N Porter Rd
Fry's Market
Culver's
The Duke at Rancho El Dorado

RHYTHM ENGINEERING

Arterial Setup | **Intersections** | View Data | TMC Selection   Calculate

Cobblestone North

	NB			SB			EB			WB		
Intersection Name	Cobblestone North												
Location [Lat	Lon]	33.083888			-112.038223			Distance to Next [ft]		3226				
Offset Reference Point	Lag Yellow												
Approach	↑ NB			↓ SB			➡ EB			⬅ WB			
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Phases	1	6		5	2		8	8		4	4	
Phase Ring	1	2		2	2		2	2		1	1	
Pedestrian Phases	6			2			8			4		
Lane Configuration	NBL	NBLT	NBA	NBT	NBTR	NBR	SBL	SBLT	SBA	SBT	SBTR	SBR	EBL	EBLT	EBA	EBT	EBTR	EBR	WBL	WBLT	WBA	WBT	WBTR	WBR
Number of Lanes	1		2	1			3	1		1			1			1		
Left Turn / Approach Type	Protected			Protected			Protected			Protected		
Left Turn Position	Lead or Lag			Lead or Lag			Lead Only			Lead Only		
Pedestrian Walk	7			7			7			7		
Pedestrian Clearance [s]	23			24			43			42		
Min Green Time [s]	7	20		7	20		7	7		7	7	

Coordination Diagram [AM Peak 0500-0900]

Mode: Offsets   View: Bandwidth   ● SB   ○ NB   Display: Duration | Offsets | White Space | Travel Time

Cobblestone North   Cobblestone South   SR238-Smith Enke   Maricopa-Fiesta   Edison   Hathaway

Phase Sequence Diagram [AM Peak 0500-0900]

Cycle Length: 130 s

Cobblestone North
21   19   60   30

Cobblestone South
67   43   20

SR238-Smith Enke
25   14   26   31   34

Maricopa-Fiesta
33   41   36   20

Edison

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	Total	**$18,500.00**

Signature: _____   Date: _____

Game|Changer

Game|Changer
HARDWARE
SPECIFICATIONS
Version 1.0

Game|Changer is the most advanced AI-based data collection solution on the market and provides immediate results with a GPU at the edge and cellular connectivity.

FEATURES

- Collect unlimited traffic data year-round with a cost-effective, flat annual license.
- Instant, automated uploads deliver real-time access to your data.
- Accurately detects and classifies pedestrians, bicycles, and vehicles.
- Perform detailed speed studies on intersections, arterials, freeways, and roundabouts.
- On-device AI processes video streams at the edge, eliminating the need for external uploads.
- Supports up to five 12V 50Ah LiFePO$_4$ batteries for 100+ hours of field processing.
- Customizable study schedules maximize battery efficiency.
- Hot-swappable batteries enable continuous, uninterrupted data collection.
- Deep data analytics, rich data charting, and optimized timing plans.

HARDWARE COMPONENTS

Included Components:
- **Extendable pole with network cable retractor and pole mount brackets**
- **Two lockable ratchet straps for pole mounting**
- **4MP wide angle camera with sun-shield and M12 network cable**
- **Equipment case which houses:**
  - › **Two rechargeable 12V 50Ah LiFePO4 batteries**
  - › **20A circuit breaker and switch**
  - › **Advanced AI-based NVIDIA GPU and processing unit with cellular and Wi-Fi capabilities**
  - › **Industrial 5-port Gigabit PoE switch**
  - › **PoE Injector**
- **Padlocks for ratchet straps, case lid, and case mount**
- **Steel cable lock to prevent theft**
- **Battery charger**

Spare Components Sold Separately:
- **Ratchet strap**
- **Padlock**
- **Battery charger**
- **12V 50Ah LiFePO4 battery**

CAMERA

Field of View: Horizontal – 130 deg., Vertical – 81 deg.

Resolution: 2688x1512 (16:9)

Video Compression: H.265, H.264, MJPEG

Illumination: Color – 0.18 lux, B/W – 0.04 lux or 0 lux with IR on, Built-in IR illumination

Power: PoE IEEE 802.3af/at Type 1 Class 3, Typical 5 W, Max 12.95 W

Material: Aluminum with plastic case and sunshield

Weight: 1.1 lb. (0.491 kg)

Dimensions: Length – 6.7 in. (170 mm), Diameter – 4.0 in. (101 mm)

Enclosure Rating: IP67, NEMA 4X, IK08

Environment: -30C to +74C operating temperature, -40C to +65C storage temperature

BATTERY AND POWER

Capacity (ea.): 12V, 50Ah, 640 Wh LiFePO4 batteries

Recharge Time from Full Depletion (ea.): 10 hours (with 5A charger)

Temperature Range: Discharge – -20C to +55C, Charge – 0C to +55C

Size (ea.): 9.1 in L x 5.3 in W x 7.1 in H (232 mm x 135 mm x 181 mm)

Weight (ea.): 12.65 lbs (5.74 kg)

Active BMS Protection: Over-voltage, Under-voltage, Short Circuit

Charger: 12V 5A LiFePO4 charger included

AI-BASED GPU AND PROCESSING UNIT

Model: NVIDIA Orin Nano Super 8GB

GPU: 1024-core NVIDIA Ampere GPU with 32 Tensor Cores, 625 MHz

CPU: 6-core Arm Cortex-A78AE v8.2 64-bit CPU, 1.5MB L2 + 4MB L3, 1.7 GHz

AI Performance: 67 TOPS

Memory: 8 GB 128-bit LPDDR5, 102 GB/s

Storage: 128 GB industrial M.2 SSD

Power: 9-28 VDC, 7-15 W

Interfaces: 1x Gigabit Ethernet, 2x USB 3.1 Type-A, 1x HDMI 2.0

JetPack: 6.2

Dimensions: 4.3 in. x 5.1 in. x 2.4 in. (110 mm x 130 mm x 60 mm)

Weight: 1.7 lbs. (760g)

Environment: Operating Temperature – -25C to +85C, Storage Temperature – -40C to +85C

EQUIPMENT CASE

Materials: Engineering Plastic

Security:

Contains two short padlocks to prevent the case from being opened. One long padlock is used to secure the case to the mounting brackets of the pole and the steel cable which should be wrapped around the pole.

Dimensions: 19.1 in. x 15.0 in. x 12.2 in (484 mm x 382 mm x 310 mm)

Weight (empty): 9.3 lbs. (4.20 kg)

Weight (no batteries installed): 19.35 lbs (8.78 kg)

Enclosure Rating: IP67

POLE AND MOUNT

Materials: Pole – black carbon fiber, Brackets – black powder-coated aluminum

Dimensions: Pole (fully extended) – 21 ft 3 in. (6.57 m), Pole (fully retracted) – 6 ft. (1.8 m)

Weight: 18.35 lbs (8.32 kg)

Ratchet Straps: 8 ft. L x 1.5 in. W (2.4 m x 38.1 mm); includes small padlock for security

CONNECTIVITY

Ethernet: 5-port Gigabit PoE switch

Cellular: LTE, Verizon M2M/IoT

Wi-Fi (in/outbound): 802.11 a/b/g/n/ac, 2.4 and 5 GHz.

ENVIRONMENT

Operating Temperature: -20C to +55C

Storage Temperature: -40C to +65C, (battery: 0C to +55C)

Humidity: 5% to 95% non-condensing

We trust that the information here is helpful and if you have any further questions or require further support please don't hesitate to reach out to us at:

✉ **support@rhythmtraffic.com**

☎ **913.227.0603**

💻 **rhythmtraffic.com/contact**

We trust that the information here is helpful and if you have any further questions or require further support please don't hesitate to reach out to us at:

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