

8th ASECAP Marketing and Communications Event Webinar

21st April 2021

**Bridging the Gap between Conventional Toll Plaza Based Open Tolling Schemes
and Distance Based Closed MLFF ETC Schemes:
The Olympia Odos Hybrid Toll System in Greece**

By Konstantinos Papandreou / Konstantinos Antiochos

Olympia Odos Operation S.A.

Contents

1. The Olympia Odos Project
2. Current Tolling Environment in Greece
3. The Zone Based Tolling Concept - Issues & Criticism
4. Olympia Odos Charging Zones
5. Possible Solutions for Improved Service and Fairer Charging
6. The Hybrid ETC System Concept & How it Works
7. Hybrid Marketing Video
8. ETC Hybrid Configuration
9. ETC Gantry Placement Strategy & Equipment
10. Marketing Campaign & Key Results
11. The Road Towards Free Flow ETC
12. Conclusion - Hybrid System Benefits

The Olympia Odos Project



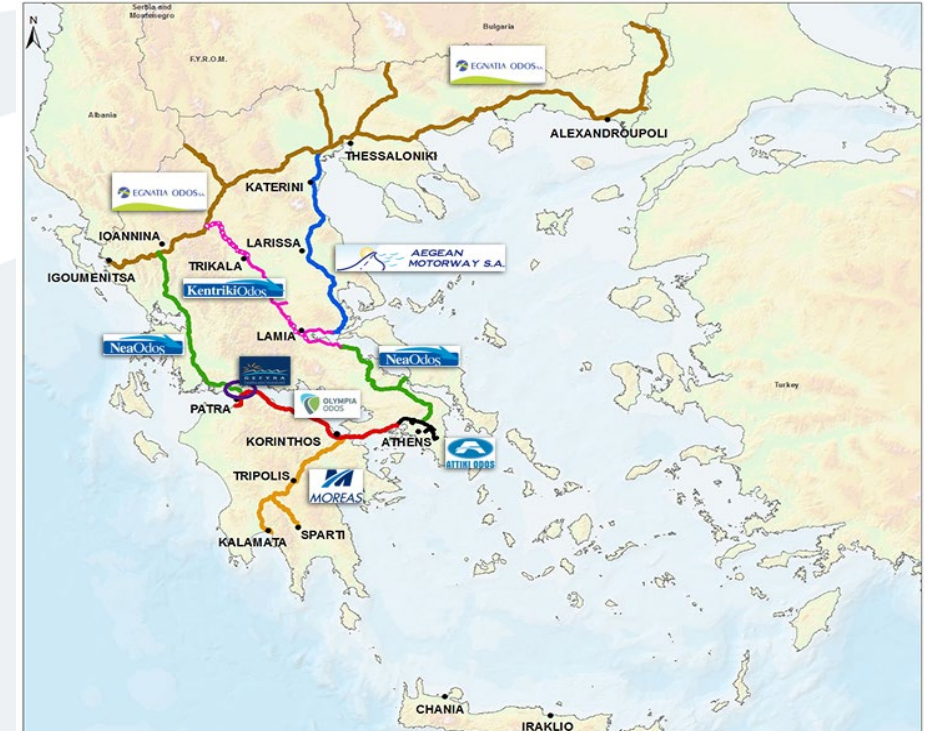
202 χλμ. km Συνολικό Μήκος Total Length	29 Κόμβοι Interchanges	5 Μετωπικοί Σταθμοί Διοδίων Mainline Toll Plazas	9 Ζεύγη Πλευρικών Σταθμών Διοδίων Pairs of Ramp Toll Plazas
4,5 χλμ. km Σήραγγες Κακιάς Σκάλας Kakia Skala Tunnels	1,2 χλμ. km Σήραγγες Δερβενίου Derveni Tunnels	2,3 χλμ. km Σήραγγες Μαύρων Λιθαρίων Mavra Litharia Tunnels	3,2 χλμ. km Σήραγγες Ακράτας Akrata Tunnels
135 Λωρίδες Διοδίων Toll Lanes	38 Άνω Διαβάσεις Overpasses	8,2 χλμ. km Σήραγγες Παναγοπούλας Panagopoula Tunnels	4,7 χλμ. km Σήραγγες Ευρείας Παράκαμψης Πάτρας Patra Bypass Tunnels
204 Κάτω Διαβάσεις Underpasses	80 Γέφυρες Bridges	6 Σταθμοί Εξυπηρέτησης Αυτοκινήτων Motorist Service Stations	22 Χώροι Στάθμευσης και Ανάψυξης Parking and Rest Areas

Μέτοχοι Shareholders



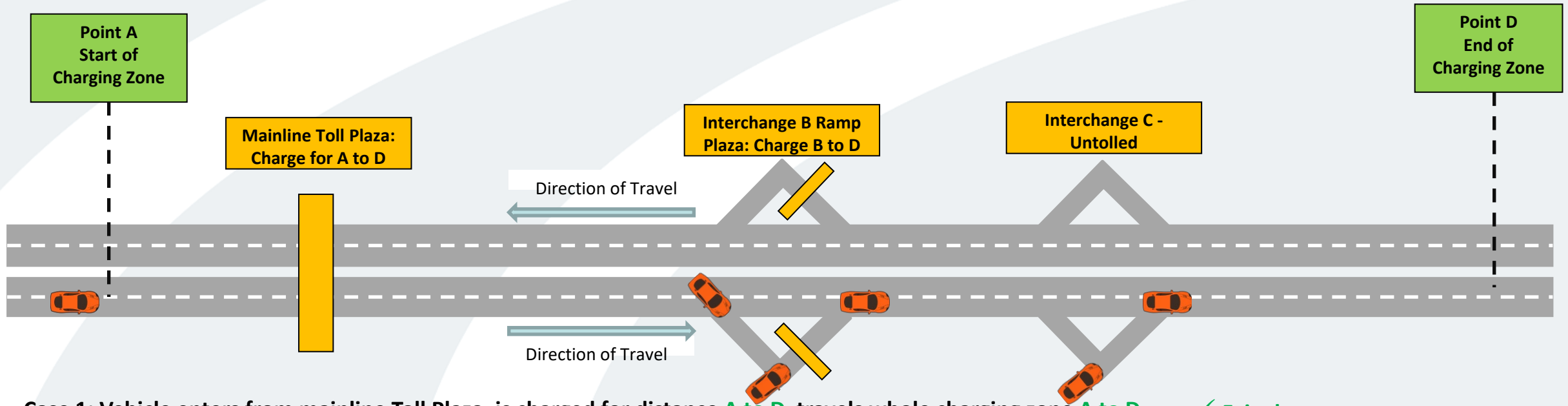
Current Tolling Environment in Greece

- Before 2007-2008, inter-urban motorways operated by the State without a comprehensive national tolling strategy.
- Mainline Plazas operated in one direction, every 80-120 km, with very few Ramp Plazas.
- 2007-2008 most inter-urban motorways transferred to private Concessions
- Pre-existing dense interchange design did not make a conventional closed toll system feasible, due to extremely large number of interchanges and ramp plazas needed
- The implementation of the Open / Zone based Tolling System in Inter-urban Motorways was and still is the only viable choice, with bi-directional Mainline Plazas every 30-40km in order to achieve better segmentation of toll fees thus fairer charging , and ramp plazas in selected interchanges to eliminate toll avoidance
- Today - 2.145 km of Tolled Motorways, Bridges and Tunnels in operation
- Full ETC interoperability, 8 Toll Chargers, 7 of which are Tag Issuers



Motorway	Key Data (2020)		
	Total Network Length in operation (km)	Total Annual Toll Transactions (millions)	ETC penetration (%)
Attiki Odos	70	65,79	54,32%
Rion-Antirriion Bridge	3,5	3,03	30,50%
Egnatia Odos	887,2	42,34	8,55%
Nea Odos Motorways	377,1	31,31	29,39%
Moreas Motorway	205	14,09	35,95%
Aegean Motorway	263,7	19,54	31,67%
Olympia Odos Motorway	202,3	40,6	38,30%
Central Greece Motorway	136,5	7,41	25,62%
Total	2.145,3	224.14	34,89%

The Zone Based Tolling Concept - Issues & Criticism



Case 1: Vehicle enters from mainline Toll Plaza, is charged for distance **A to D**, travels whole charging zone **A to D**

✓ Fair charge

Case 2: Vehicle enters from ramp Toll Plaza, is charged for distance **B to D**, travels part of charging zone **B to D**

✓ Fair charge

Case 3: Vehicle enters from mainline Toll Plaza, is charged for distance **A to D**, but travels ONLY part of charging zone **A to B**

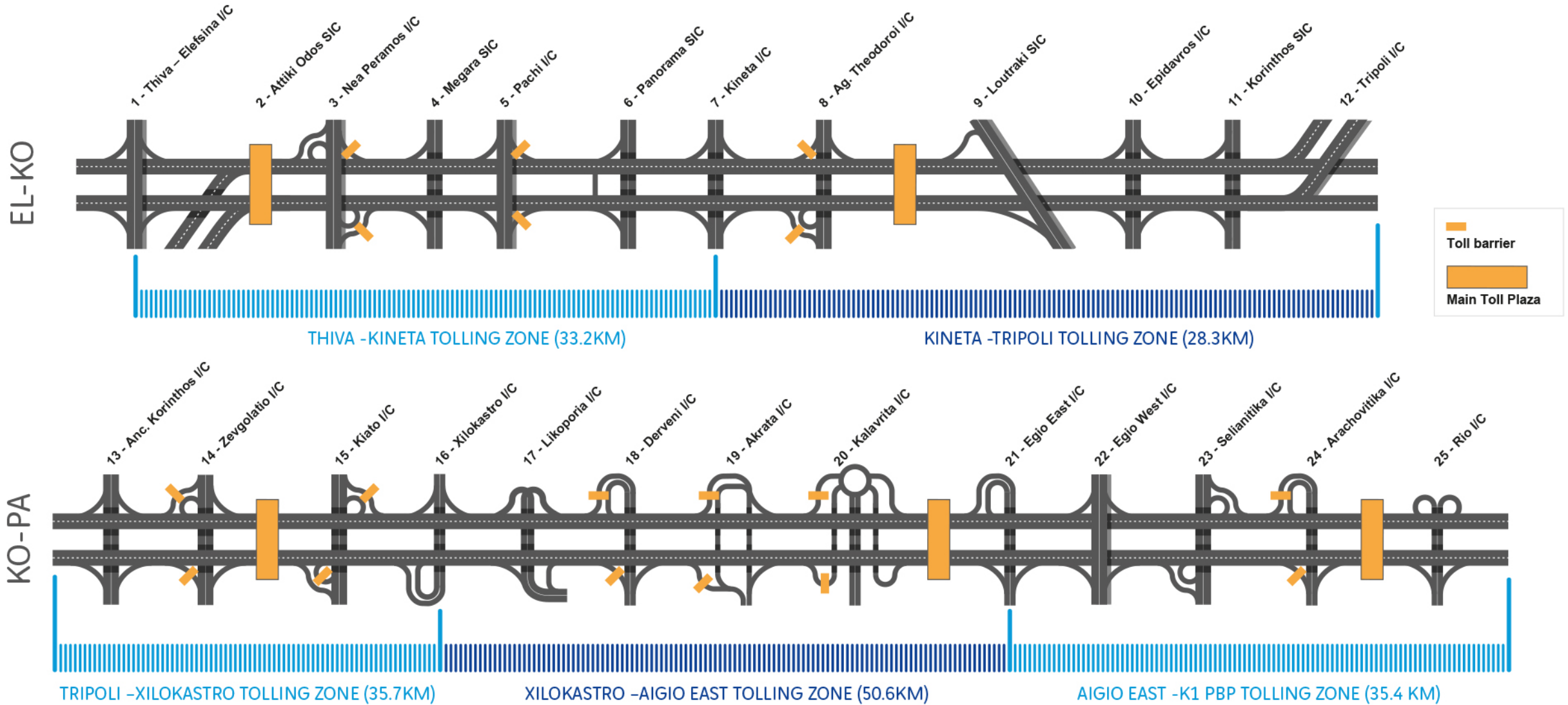
X Unfair Charge, user has paid for a larger distance than the one travelled!

Case 4: Vehicle enters from untolled interchange C, travels to end of Charging Zone D, **no charge**

Main issues & criticism:

- Frequent stops at mainline plazas every 30-40 km
- Relatively Unfair charging, especially for local frequent users who perform daily trips and are most affected

Olympia Odos Charging Zones



Possible Solutions for Improved Service and Fairer Charging

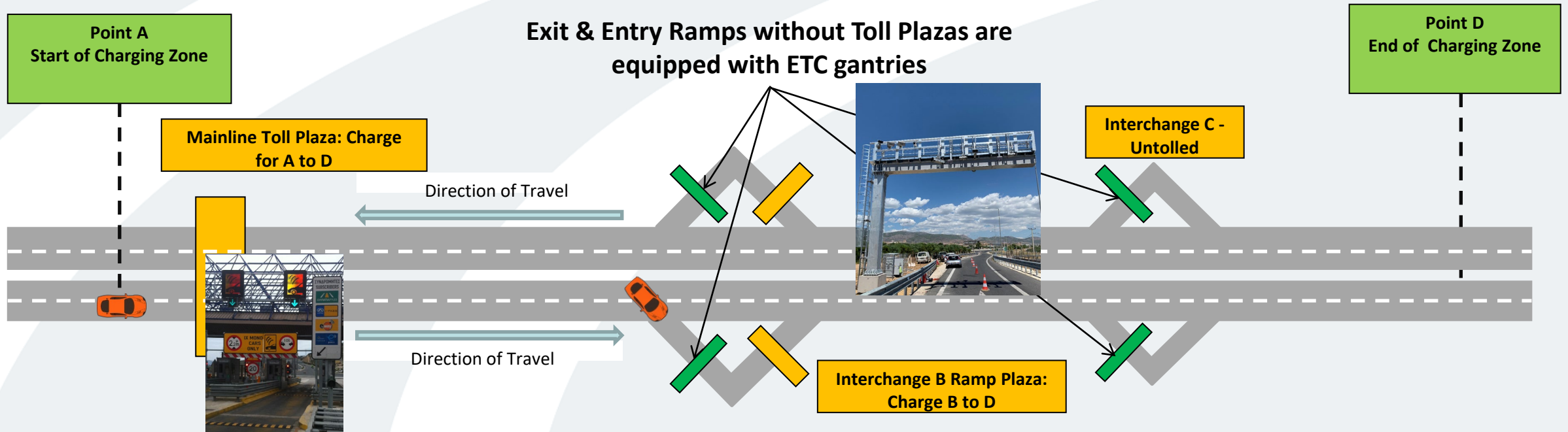
- **Implement a fully closed conventional toll system** with ramp toll plazas in all entries and exits
Too expensive to construct and operate toll plazas in all ramps due to:
 - Density (large quantity) of mostly pre-existing Interchanges
 - Existing interchanges not designed for Ramp Toll Plaza construction

- **Implement a full closed Multi Lane Free Flow ETC system** and dismantling of the conventional toll plazas
 - Enforcement issues - Private Operators are not legally allowed to issue fines
 - State should implement robust & extensive mechanism for enforcement and guarantee Tolls to Private Operators
 - Bad quality of license plates makes Automatic Number Plate Recognition difficult
 - Lack of up to date global vehicle registration database
 - Migration to a full ETC system requires very high ETC penetration (today ~30% average), achievable only through mandatory equipping of all vehicles with tags
 - Other legal, commercial and contractual issues
 - Significant investments already made for construction new conventional toll plazas

Why not combine the best of the two solutions?

- Enhance zone based system with conventional plazas, by adding ETC gantries in strategically selected ramps, creating a combined or “**Hybrid**” system which is **closed and distance based** for ETC users and zone based for Cash users.
- It’s at the users discretion to select how to be charged (Cash or ETC) based on their needs, without discrimination

The Hybrid ETC Tolling System Concept & How it Works



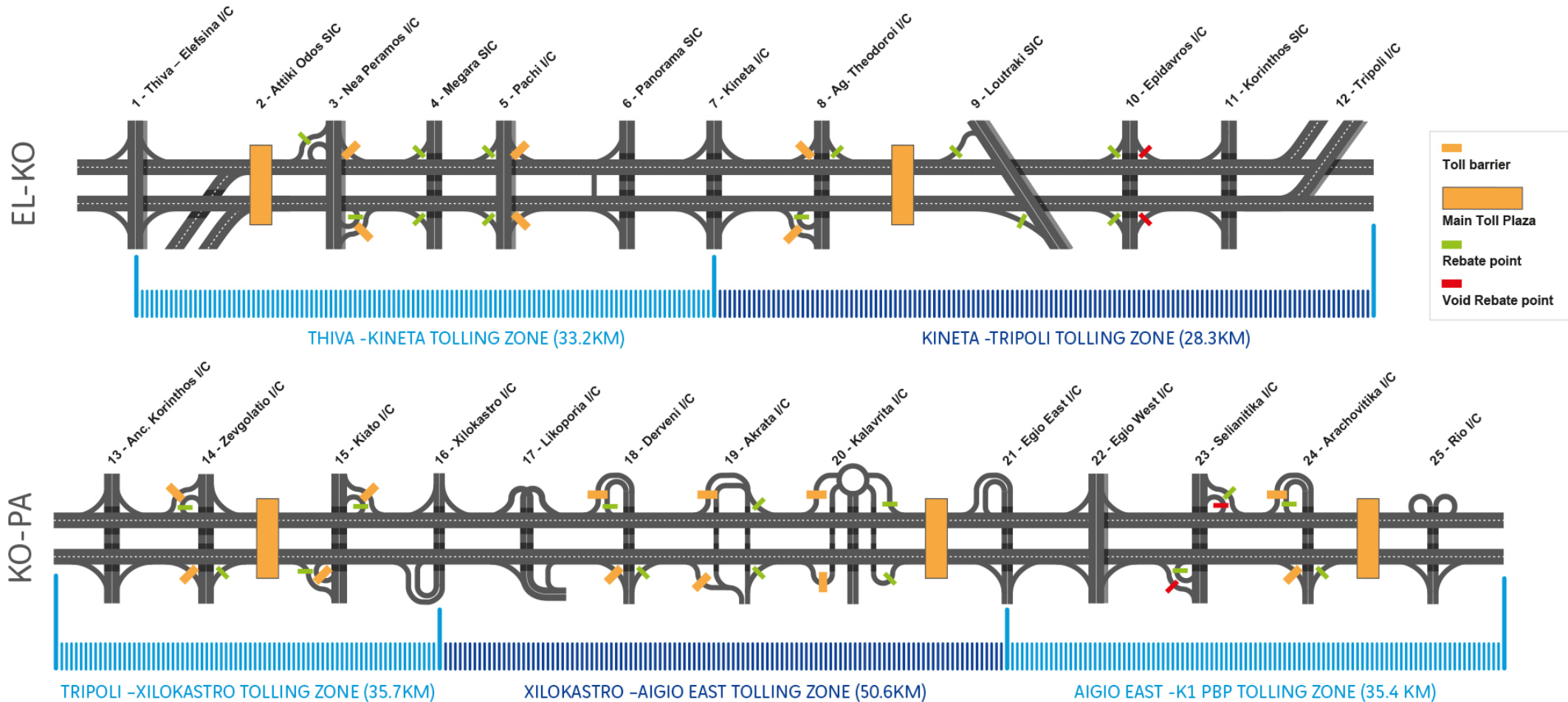
- Vehicle enters from conventional (mainline or ramp) Toll Plaza ETC lane, is charged for distance **A to D**, but travels ONLY part of charging zone **A to B**
- When Vehicle exits at Interchange B, ETC gantry records the vehicle & tag
- The Toll System matches the transaction from the conventional toll Plaza with the passage recorded from the ETC Gantry, and generates a rebate (credit) to the user's ETC account equal to the distance not travelled **B to D**.
Final Toll Paid = **(A to D)** - **(B to D)** = **A to B** i.e. actual distance travelled

✓ Fair charge

Olympia Pass Hybrid Marketing Video



ETC Hybrid Configuration



- 30 ETC gantries in 13 interchanges
- 4 new technical buildings for power and network in I/C's without pre-existing ramp plaza technical buildings
- Expansion of Main and Disaster Recovery Central Systems
- 24X7 Real Time Monitoring System (RTMS)

ETC Gantry Placement Strategy & Equipment

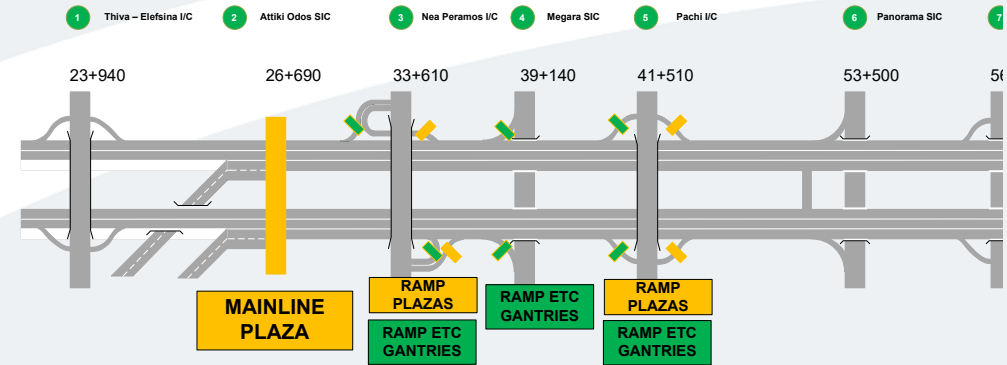
Placement Strategy main criteria:

- ✓ The provided rebate is significant (i.e. no need for gantry placement close to the end of Charging Zone)
- ✓ Equipped Interchanges must serve adequately populated areas (i.e. not with very low traffic)

ETC Gantry Equipment:

- ETC Antennae to cover ramp width and read tags
- License plate capture camera, for answering to claims for missed rebates
- Video Detection and Classification - to detect and classify vehicles
- Overview Video cameras, as a backup to license plate cameras
- Gantry controller which connects and manages all devices
- Power and Communication equipment
- Gantry structure, to mount equipment, specially designed not to require lane closure for maintenance

Central System - gathers all gantry and toll plaza data, performs transaction matching and applies rebates to eligible ETC accounts



Marketing Campaign & Key Results

- System was launched 1st January 2021
- Marketing & Communication Campaign was launched concurrently for a full month
- Campaign consisted of frequent Radio Spots, banners in websites, advertisements in national and local press
- Focus on decreased toll cost for Olympia Pass customer - up to 76% lower.
- Hybrid was combined with existing frequency based scalable discounts for LV's (up to 60%)
- Available to all vehicles except motorcycles
- Special new program for motorcycles with Opass Motocard with flat 20% discount
- Extended hours for call center and Customer Service Centers to cater for increased demand

Τέλος στις περιττές διαδρομές

Οι τοπικές μετακινήσεις αλλάζουν

Απολαύστε εκπτώσεις έως 76% στις τοπικές διαδρομές

Τώρα αποκλειστικά με το ΟΛΥΜΠΙΑ PASS απολαμβάνετε τις χιλιμετρικές χρεώσεις του νέου συστήματος Hybrid και πληρώνετε μόνο για την απόσταση που έχετε διανύσει.

Μόνο με τη χρήση

ΟΛΥΜΠΙΑ PASS

...και πληρώνεις μόνο όσο πας!

www.olympiados.gr
22960 9555
Σημεία Εξυπηρέτησης Πελατών: Ελευσίνα, Ισθμός Κάτω, Ρίο

Ευρωπαϊκή Ένωση
Ευρωπαϊκό Ταμείο Περιφερειακής Ανάπτυξης

Παραρτηματικό Ταμείο Έργων Υποδομής

Ευρωπαϊκή Ένωση
Ευρωπαϊκό Ταμείο Ανάπτυξης

ΕΣΠΑ 2014-2020

ΟΛΥΜΠΙΑ ΟΔΟΣ

Θες να πληρώνεις μόνο για τα χιλιόμετρα που οδηγείς;

Με το νέο σύστημα διοδίων HYBRID της Ολυμπίας Οδού μπορείς!

Για πρώτη φορά στην Ελλάδα έως και 76% χαμηλότερη χρέωση με το νέο σύστημα χιλιμετρικής χρέωσης Hybrid μέσω του ΟΛΥΜΠΙΑ PASS.

ΟΛΥΜΠΙΑ PASS

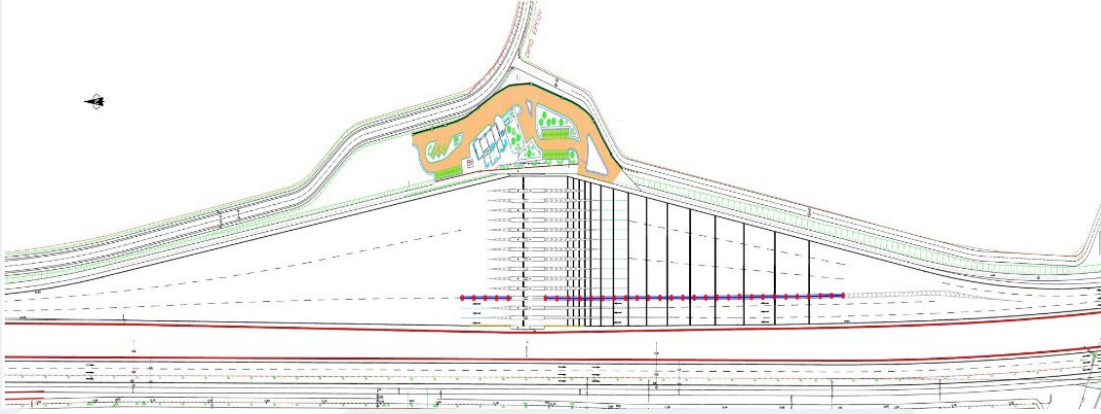
...και πληρώνεις μόνο όσο πας!

www.olympiados.gr

Key results - Despite COVID Lockdown

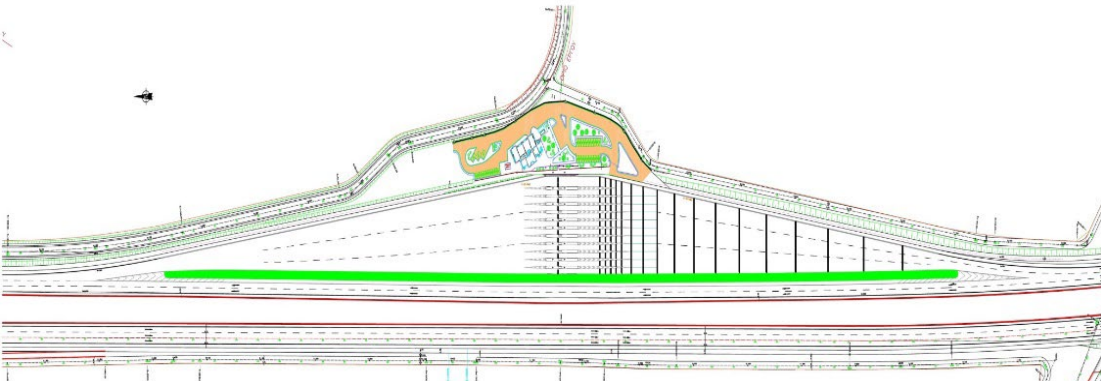
- Effect of Campaign: For the month of January 2021, during the campaign **transponder distribution doubled** to ~3.000/month compared to~1.500/month previously
- From Jan 1-2021 until mid-April 2021 **over 240k Olympia Pass Customer trips** received rebates, **average saving ~ 1,16€ / trip**

The Road Towards Free Flow ETC



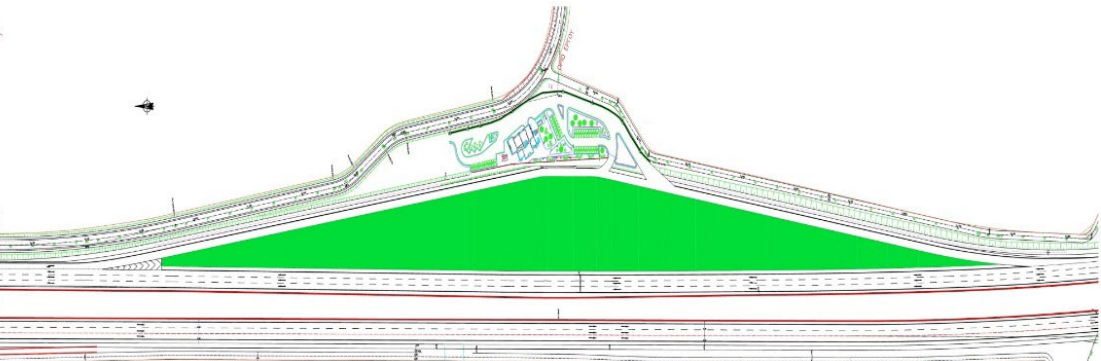
Phase 1: Hybrid Toll System

- Existing Toll Plazas remain unchanged & Hybrid Gantries are installed
- Promotion of ETC, to drastically increase percentage of vehicles with OBUs
- Preparation of legal and other framework for free flow operation, including contractual negotiations / arrangements with the Concessionaires due to the impact of the distance-based charging versus existing status (open zone based system) and guarantee of lost revenue from violations



Phase 2: Free flow for ETC users only (with rebate model)

- Dedicated free flow lanes gradually created in pilot existing toll plazas
- Enforcement mechanism trial and evaluation
- Promotion of ETC continues along with gradual reduction of level of service in cash lanes
- Following success of enforcement mechanism and reduction of violations to acceptable levels dedicated free flow ETC lanes created in all plazas



Phase 3: Free flow ETC for all (with origin-destination model)

- Ramp ETC gantries in all interchanges
- Mainline gantries in place of all mainline plazas
- Mandatory equipping of all vehicles with transponders
- Conventional toll plazas are dismantled
- Multi Lane Free Flow distance based system

Conclusion - Hybrid System Benefits

- Answers to the **social demand for distance-based charging**, especially where there is a real need
- Takes advantage of the existing Toll Plaza infrastructure without affecting the existing open toll system
- Provides **flexibility in future expansion of system** where needed as well as developing commercial policies
- **Makes ETC more attractive** and is expected to increase ETC penetration and attract more users to use the motorway
- **Does not increase the risk for toll evasion** (as is the case with fully free flow ETC). Users first pay in full, and then eligible trips receive rebates
- Is the most cost effective and fast track way to implement **distance-based charging in motorways with existing conventional zone based open toll system**, where free flow tolling is not yet a viable option
- **Paves the way for eventual smooth evolution towards a free flow ETC system**, subject to the necessary preparation (legal & contractual arrangements and testing of enforcement mechanism by the State) since infrastructure (ETC gantries) can be re-used in case of migration to free flow.
- The importance of a well designed and executed marketing campaign is paramount

It is the first distance based tolling system in Greece and probably the first step before a multi lane free flow or similar system in the future.

Thank You for Your Attention!



Distance-based toll pass
www.olympiaodos.gr/hybrid/

Only with
the OLYMPIA
PASS
transponder

Contact:

Konstantinos Papandreou

kpapandreou@olympiaoperation.gr

+30 22960 95400

Konstantinos Antiochos

kantiochos@olympiaoperation.gr

+30 22960 95400