## **CITYHUSH – How to create Quiet Zones**

#### Stockholm, December 11, 2012 CityHush dissemination event Clas Torehammar, Tyréns AB Acoustics







## CityHush –

-Acoustically Green Road Vehicles and City Areas

## Statements in the "Call":

- "Noise reduction within urban areas by 10-20 dB(A) units should be achieved
- New passenger car CO2 emission should be reduced by 40-50% and for heavy duty vehicles by 10-30%
- Total of other emission should be near zero"



# Project overview – "Toolbox"

- ✓ WP 1 Acoustically green areas Q-zones
- ✓ WP 2 Noise score rating models and annoyance
  - Improved score rating indoors
  - Development of score rating outdoors
- ✓ WP 3 Noise and vibrations control at source
  - ✓ Road surfaces
  - Development of quiet tires
  - Classification of quiet vehicles
- ✓ WP 4 Propagation of road traffic noise
- $\checkmark$  WP 5 Validation of results

✓ WP 6 – Dissemination of project results



- An area where a significantly lower level of traffic noise is maintained by allowing only low noise vehicles to enter
- Traffic zoning exists in both Stockholm and Gothenburg

### Other European Cities:

- ✓ Essen Germany
- Bristol England
- 🗸 Bratislava Slovakia







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#### Description of test site - Stockholm





#### **Traffic Simulations**

- KTH carried out traffic simulations using the Emme 3 Travel demand forecasting system Sampers
- Traffic flows are a result of peoples travel decisions in a number of predetermined dimensions
- Peoples decisions are conditional on a number of demand related factors

#### Acoustic Simulations – Noise mapping

- ✓ Software CadnaA Version 4.2.139
  - ✓ Noise prediction method NMPB-Routes-96
- ✓ LNV are estimated to be 10 dB less noisy
- ✓ For a simple comparison of different scenarios Lde,av
- ✓ Various fees, ownership, zone size



7



### A classification of quiet vehicles must be established.

- o Fee levels or ban?
- Ban at night, fee during day?
- Plan zones for simplicity or best efficiency?
- Public transport alternatives.



SEVENTH FRAMEWORK PROGRAMME	Stockholm	Policy	Low noise vehicle ownership outside, %	Low noise vehicle ownership outside, %	Zone size
	BC (S0)	none	1	1	-
	SSI52	Low Noise feetal Constants	20	100	large







- In the model quiet vehicles also implies better road surface
  - Ban on studded tyres is required!
- Speed reduction is included
  - Allthough speeds allready low
- Screens can be planned for "detour choices"
- Facades and street measures
  - Utilize the potential!





- ✓ Noise levels have locally been reduced by 12 dB
- High share of low noise vehicle ownership within the Q-Zone is necessary
- Small changes in fee amount does not change the traffic noise situation
- The importance of Q-zone design, where size and location are trivial to the final result
  - A Q-zone has a minimum size due to the ambient noise in the Q-zone boundaries
  - Designing the Q-zone borders without conflicts with any larger roads and transit routs will reduce negative effects in the Q-zone surrounding





Stockholm, december 2012

CityHush



### Improved indoor Hot-Spot mapping







## Thank you!

# clas.torehammar@tyrens.se <u>www.tyrens.se</u> www.cityhush.org



