Efficiencies of power systems for a car

Compare the efficiencies of the following chains for a car's power train.

1. Internal combustion engines, assuming very low consumption (4 L/100 km) of:
   a) Gasoline;
2. Electric motor onto the wheels, where electricity is provided by:
   a) A battery, charged with hydroelectricity;
   b) A PEFC, filled with H_2 generated with an electrolyser, itself fed with electricity coming from photovoltaic solar panels.

Thinking further:

- What other combinations can you imagine?

Useful information:

Energy at the wheel: 150 Wh/km

Fuel properties (average):

	MJ/kg	kg/L
– Gasoline	44.2	0.74

Efficiencies:

Battery:	85% for a complete cycle (charge and discharge)
Hydro-electricity:	88% technically; statistically counted as 100% (renewable)
Photovoltaics:	18% technically; statistically counted as 100% (renewable)
Electrolysis:	75% for the production of H_2
Fuel cell:	65% H_2 to electricity
Transmission:	80% electrical motor to wheel